

SPEED CONTROL

OWNERS MANUAL

with Operating Instructions
Installation Instructions
and Trouble Shooting Guide

F U L L Y E L E C T R O N I C

THIS MANUAL, YOUR KIT, AND YOU

This kit was designed for most U.S. cars, light trucks, and vans with swinging brake pedals and uncovered drive shafts. It may be put on vehicles with fuel injected engines which have air throttles, and on diesels which have vacuum pumps, but with the latter, a vacuum regulator must be used. Those engines with low vacuum may need a vacuum reservoir to improve the performance of their Speed Control. These accessories are available through your dealer, your automotive service center or from most retail automotive parts outlets.

All through the instructions there are **WARNINGS**, **CAUTIONS**, and **NOTES** which are meant to make it easier for you to put the Speed Control on your car and safer to use it. We have gathered these tips from people across the country who have told us about their problems and how they worked around them. Many are quite clever and able to handle special cases.

Even with all these reports from the field, we cannot cover every condition which you might encounter. There are just too many different car makes and models. We do our best to tell you how to handle most vehicles, but we must depend on your good judgement for dealing with the rest.

Therefore, we believe you can understand why we strongly urge you to think carefully about what could happen to you, your passengers, and your car if you use any tools, parts, fastening methods, routing or procedures which are not described in this manual.

There is no drain on the battery when the ignition switch is off - even if the control switch is left on.

Your Speed Control needs no regular service.

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Printed in United States of America

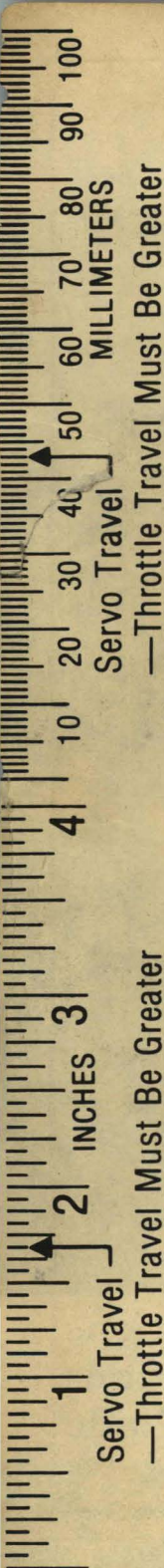


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OPERATING INSTRUCTIONS

(The ROAD TEST is in Section 14 on Page 35)

It would be well to read through these Operating Instructions before using your Speed Control, as the operation of this model differs slightly from our previous systems. The main difference is that the ACCEL feature **will not work until** you have SET a speed.

Each time you turn the ignition switch off or slide the Control Switch button to OFF, you de-energize the system. To re-energize it, you must move the button to ON and wait 3 seconds for the capacitors to be charged. After 3 seconds, if you are driving above the low speed setting, you can "set" a control speed - then the RESUME/ACCEL button will function. Disengaging the system with the brake or clutch pedal does not require a 3-second wait, and it is unnecessary to set a speed to make the ACCEL and RESUME features operational.

In the regulator box of your Speed Control is a safety switch which will not let the system be engaged for automatic speed control until your vehicle is moving at a speed greater than about 30 mph. This is to keep your engine from going to wide open throttle if someone should accidentally press the button to RESUME/ACCEL while the vehicle is standing or moving in stop-and-go traffic.

At the factory an attempt is made to set the "low speed switch" between 27 and 33 mph for rear drive vehicles. It should be checked during the ROAD TEST. For front drive vehicles, the regulator must be re-adjusted.

The **Control Switch** is used to operate all of the system's features described in the following paragraphs. The lever type switch and the clamp-on type are mounted on or near the turn signal lever. The panel type is usually attached to the dash or console.

OFF-ON- The first time you use the Speed Control, you should do so on a fairly straight paved road which is free of heavy

traffic. Move the slide button to the ON position. Nothing will happen - this is to make the system ready to use.

SET SPEED - To engage the system or "set speed", drive at any speed above 32 mph, press the SET/COAST button and release it. Remove your foot from the accelerator and your speed will remain constant within plus or minus 1 1/2 mph or within the capability of your engine. Your "SET/SPEED" is now in the regulator's memory.

You can increase speed at any time with the accelerator pedal. When you release the pedal, you will return to the set speed.

ACCELERATION - You can also temporarily increase your speed by pressing and holding the button to RESUME/ACCEL. Your vehicle will accelerate until you release the button, at which time it will return to your set speed.

If you want to make the higher speed your new set speed, release the RESUME/ACCEL button, and as you do, quickly press and release the SET/COAST button.

It is important to understand that your set speed is NOT the speed of your vehicle when you PRESS the SET/COAST button; it is the speed of your vehicle when you RELEASE the SET/COAST button.

COAST - When you want to reduce your set speed, press and hold the SET/COAST button. This erases the old set speed, disengages the Speed Control, and allows your vehicle to coast. Just before it reaches the speed you want, release the button and you will give the regulator a new speed at which to control, providing it is above your low speed setting.

RESUME - When you must reduce your speed by disengaging the system with the brake or even come to a stop for a moment, you can return to your set speed by manually driving to a speed above 32 mph, pressing the button to

RESUME/ACCEL, and then releasing it. Your vehicle will accelerate to the set speed and control there.

If, while you were stopped, you moved the slide button to OFF or turned the ignition off, the Resume feature will not function, because the set speed has been erased from the regulator's memory.

Should the rate of acceleration be faster or slower than you like, you can increase your speed with the accelerator pedal to within a few mph of the set speed and then push the button to RESUME/ACCEL and release it.

DISENGAGEMENT - When you wish to manually control the speed of your vehicle, you may disengage it from automatic control in three ways:

1. Depress the brake pedal (brake or clutch with standard transmission). It is not necessary to apply the brake - you need only to tap the pedal.
2. Push the slide switch to OFF. This clears the memory and discharges the electronic system.
3. Turn off the ignition switch. Obviously this last method is used only in an emergency. The set speed is erased by this procedure also.

UNUSUAL CONDITIONS - When the regulator is adjusted right, your

selected speed should be held within plus or minus 1 1/2 mph. This control span will widen as you drive at higher altitudes. The condition of the engine or a leak in the vacuum system can also impair the Speed Control's performance because engine vacuum is its muscle to open the throttle when more speed is called for.

Any opening of the throttle lowers the vacuum to some degree. A wide open throttle can drop the vacuum almost to zero. When you are pulling an extra heavy load, climbing a very steep hill, or bucking a severe head wind, a much wider than normal throttle opening is called for, but this drops the vacuum so low that the servo is deprived of the strength it needs to hold speed.

The way to handle these once-in-a-while problems is to bring the vehicle up to speed with the accelerator pedal - and then let the Speed Control take over again.

Use your Speed Control carefully until you become as familiar with it as you are with your accelerator or your brake. Then it will become a friend which keeps you from being tired on a long trip. It can keep you from over-speeding, which can be costly. It can save you money if you are one of those people who do not drive with a steady foot. And it could be a lifesaver, because it lets you keep your eyes on the road instead of always having to check the speedometer.

THIS RECORD MAY BE OF INTEREST TO YOU LATER

At the time my Speed Control was installed, I was driving a _____

My mileage was _____ The date was _____

I bought the kit from _____

The installer's name was _____

He was employed by _____

Which is located at _____

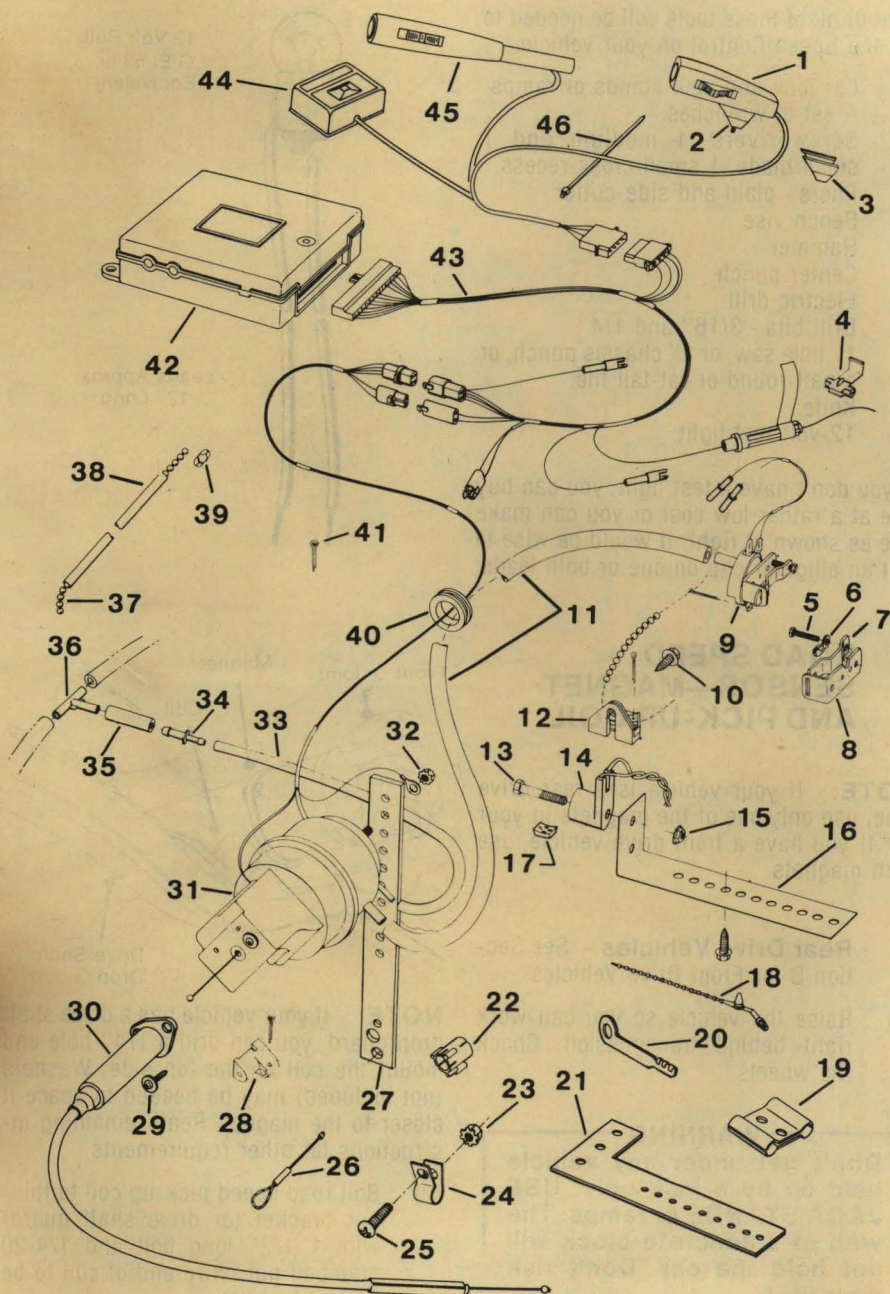
Kit price \$ _____ Installation Cost \$ _____ Paid with _____

PARTS LIST

- | | | | | | |
|-----|----------|---------------------------------------------------------------------|-----|----------|-------------------------------------------------------------------------------------------------|
| 1. | 250-3002 | Control Switch - Clamp On
(Includes Small Clamp
and Setscrew) | 24. | * | Clamp - Tube Type
3/16", 1/4" (2), 5/16", 1/2" |
| 2. | 250-3001 | Clamp - Small Lever
(Includes No. 6-32 x 5/16"
Setscrew) | 25. | * | Screw, No. 10-32x1/2"
Rd. Hd. |
| 3. | 250-3003 | Clamp - Large Lever | 26. | 250-3089 | Hook-up Cable
(Looped) |
| 4. | * | Wire Connector - Blue | 27. | 250-3014 | Bracket - Servo |
| 5. | * | Screw - No. 8-32x3/4" Hex
Hd. Slotted Machine | 28. | * | Connector - Bead Chain
(Ford Type) |
| 6. | * | Connector - Bead Chain
Eyelet Type (2 Required) | 29. | * | Screw & Washer Assembly
No. 6-32 x 7/16" Tapping |
| 7. | 250-3006 | Clamp (Clutch) | 30. | 250-3085 | Cable Assembly - Servo |
| 8. | 250-3007 | Bracket (Clutch) | 31. | 250-3015 | Servo |
| 9. | 250-3044 | Disengagement Switch
and Valve Assembly | 32. | * | Nut & Washer Assembly
1/4-20 Hex & Ext. Tooth |
| 10. | * | Screws, 1/4-14 x 3/4" Hex.
Washer Hd. Tapping
(7 Required) | 33. | 250-3016 | Hose - Vacuum
5/32" x 48" Long |
| 11. | 250-3008 | Hose - Vacuum
9/32" x 60" Long | 34. | * | Reducer - Vacuum Hose
(1/4 - 3/16") |
| 12. | 250-3010 | Anchor - Bead Chain | 35. | * | Hose - Vacuum
7/32" x 1 3/8" Long |
| 13. | * | Bolt, 1/4-20 x 1/2"
Hex. Hd. | 36. | * | Tees - Vacuum Hose
3/16 - 3/16 - 3/16, 1/4 - 1/4 - 1/4
5/16 - 5/16 - 1/4, 3/8 - 3/8 - 1/4 |
| 14. | 250-3011 | Coil - Road Speed
Pick-Up | 37. | * | Chain - 3/16" Bead
32" Long |
| 15. | * | Nut, 1/4-20 Hex Stamped | 38. | * | Cover - Bead Chain - 18" Long |
| 16. | 250-3013 | Bracket - Road Speed
Pick-up Coil | 39. | * | Coupling - Bead Chain
(Double Ended) |
| 17. | * | Magnets (2 Required) | 40. | * | Grommet - For 1" Hole |
| 18. | * | Tie Straps - Beaded
(6 Required) | 41. | * | Cotter Pin - 1/16" x 5/8"
(4 Required) |
| 19. | 250-3088 | Cable Clamp - Parallel
(No. 123) | 42. | 250-3078 | Electronic Regulator
(Yellow Box) |
| 20. | 250-3087 | 3-Bead Connector
(No. 124) | 43. | 250-3004 | Wiring Harness |
| 21. | 250-3086 | Bracket - Servo Cable
(No. 199) | 44. | 250-3084 | Control Switch -
Panel Mounted |
| 22. | 250-3090 | Coupling Cover
(Slotted Plastic) | 45. | 250-3032 | Control Switch -
Lever Type |
| 23. | * | Nut - No. 10-32 Hex
and Ext. Tooth Lock
Washer Assembly | 46. | * | Tie Strap - 4", 6 3/4", & 15" |

***Items which are not numbered may be obtained from your vehicle dealer
or any automotive supply store.**

PARTS IDENTIFICATION



INSTALLATION INSTRUCTIONS

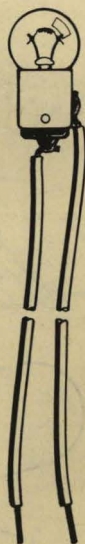
1. TOOLS NEEDED

Most or all of these tools will be needed to put the Speed Control on your vehicle.

- (a) Car jack and jack stands or ramps.
- (b) A set of wrenches.
- (c) Screwdrivers - 1 medium and 1 small blade, 1 small cross-recess.
- (d) Pliers - plain and side-cutter
- (e) Bench vise
- (f) Hammer
- (g) Center punch
- (h) Electric drill
- (i) Drill bits - 3/16" and 1/4"
- (j) 1" hole saw, or 1" chassis punch, or a half-round or rat-tail file.
- (k) Knife
- (l) 12-volt test light

If you don't have a test light, you can buy one at a rather low cost or you can make one as shown at right. It would be wise to put an alligator clip on one or both leads.

HOMEMADE TEST LIGHT



12 Volt Bulb
G.E. 53 or
Equivalent

Leads Approx.
12" Long

2. ROAD SPEED SENSOR—MAGNET AND PICK-UP COIL

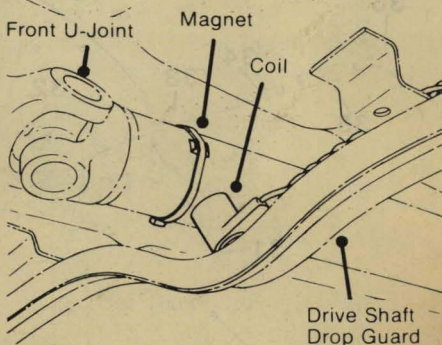
NOTE: If your vehicle is a rear drive type, use only one of the magnets in your kit. If you have a front drive vehicle, use both magnets.

A. Rear Drive Vehicles - See Section B for Front Drive Vehicles.

- (1) Raise the vehicle so you can work right behind transmission. Chock the wheels.

WARNING

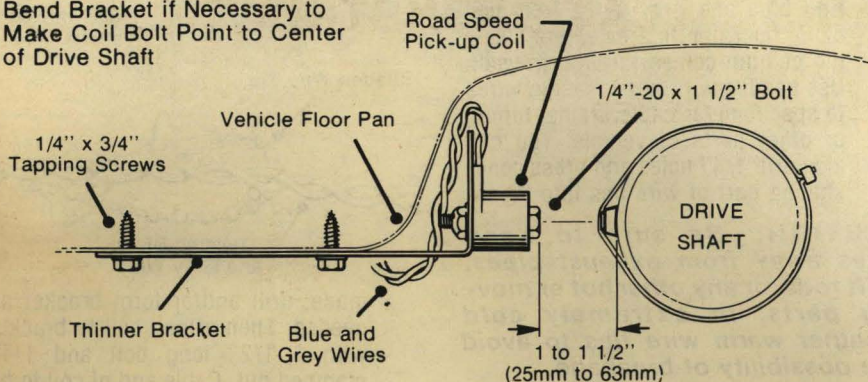
Don't get under any vehicle held up by a jack only. **USE JACK STANDS** or ramps. The web of a concrete block will not hold the car. Don't risk your life!



NOTE: If your vehicle has a drive shaft drop guard, you can drill a 1/4" hole and mount the coil on the top side. Washers (not included) may be needed to space it closer to the magnet. Read remaining instructions for other requirements.

- (2) Bolt road speed pick-up coil to thinner bracket (or drive shaft guard) with 1 1/2" long bolt and 1/4-20 stamped nut. Wire end of coil to be toward bracket.

Bend Bracket if Necessary to Make Coil Bolt Point to Center of Drive Shaft



- (3) Under vehicle hold bracket against floor pan on driver's side (no closer than 6" from converter) so coil bolt head is $1\frac{1}{4}" \pm \frac{1}{4}"$ from drive shaft and not more than 12" in back of U-Joint. There is a measuring scale inside front cover of this manual. Bend bracket as needed to make bolt point at a spot on middle of drive shaft, and mark that spot for magnet location. While holding bracket in that position, mark floor pan through two of bracket holes as far apart as possible.

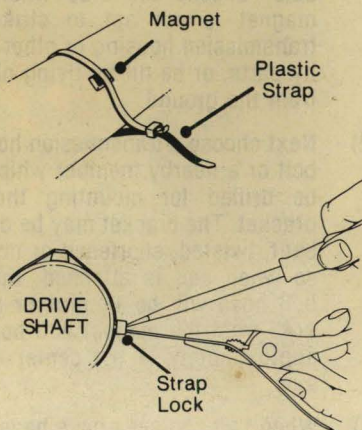
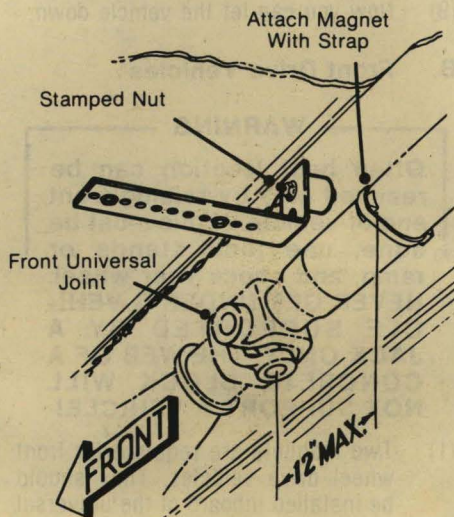
- (4) Drill or punch two $\frac{3}{16}"$ holes in floor pan. Before drilling, fold carpet inside car back out of the way and see that nothing else will be hit.

- (5) Fasten bracket with two $\frac{1}{4}" \times \frac{3}{4}"$ long tapping screws.

NOTE: Only one magnet is used for rear drive vehicles.

- (6) Place magnet at spot marked on drive shaft. Secure magnet with 15" long plastic tie strap. Be sure ribbed side of strap is against magnet and seated between two ribs on magnet casing. Feed strap end through strap lock and cinch it up.

- (7) Place blade of screwdriver against strap lock and use pliers to pull on strap end. Use about as much force as would be required to lift 15 lbs. Cut excess strap flush to $\frac{1}{16}"$ from lock.



- (8) Run blue and grey wires from coil along floor pan to area where steering column comes through firewall. Use beaded wire ties to fasten wires to speedometer cable, frame, tubing or other parts of vehicle. You can also drill 1/4" holes and press cone-shaped part of wire ties into them.

CAUTION: *Be sure to keep wires away from exhaust pipes, shift rods, or any other hot or moving parts. In extremely cold weather warm wire ties to avoid the possibility of breakage.*

- (9) Now you can let the vehicle down.

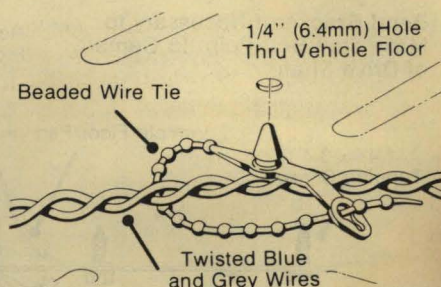
B. Front Drive Vehicles

WARNING

Often best location can be reached only by raising front end of vehicle. If this must be done, use jack stands or ramp, and chock rear wheel. **NEVER GET UNDER A VEHICLE SUPPORTED BY A JACK ONLY. THE WEB OF A CONCRETE BLOCK WILL NOT SUPPORT A VEHICLE!**

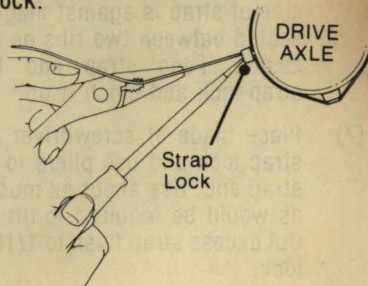
- (1) Two magnets are required for front wheel drive vehicles. They should be installed inboard of the universal joint (covered by a rubber boot), and located 180° apart on the rotating housing of either the right or left axle. Choose the side where the magnet is not apt to strike the transmission housing or other nearby parts, or be hit by flying objects from the ground.
- (2) Next choose a transmission housing bolt or a nearby member which can be drilled for mounting the coil bracket. The bracket may be drilled, bent, twisted, shortened or notched so when coil is attached, the coil bolt head will be 1" plus or minus 1/4" from the magnet and pointing approximately to the center of the axle.

- (3) When two choices above have been



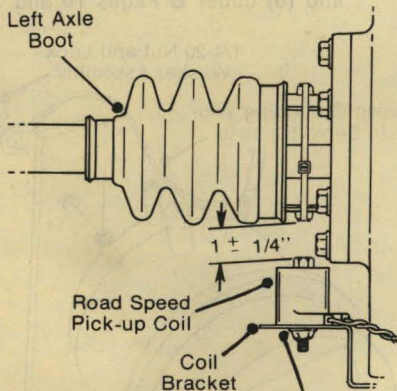
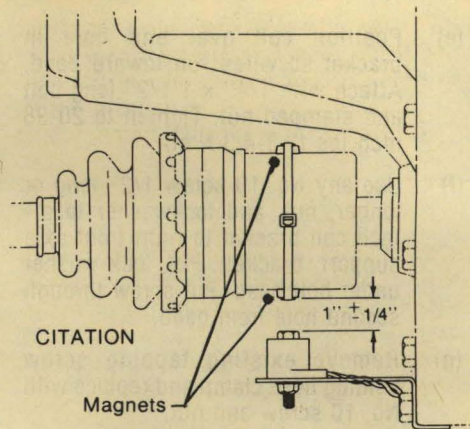
made, drill and/or form bracket as needed. Then attach coil to bracket with 1 1/2" long bolt and 1/4" stamped nut. Cable end of coil to be against bracket, bolt head to be at other end of coil. Tighten nut to 20-33 inch lbs. More torque may damage coil.

- (4) DO NOT INSTALL COIL AND BRACKET, but hold that assembly in its installed position. Mark a spot on axle housing in line with coil bolt. Lay bracket aside.
- (5) Place one magnet on spot marked and place second magnet 180° around on opposite side. In operation, center of magnets must pass coil within the width of the coil bolt head.
- (6) Secure magnets in position with 15" long tie strap. Strap must have ribbed side against magnets and must pass between two ribs on magnet casings. Feed strap end through strap lock and cinch it up. Place blade of screwdriver against strap lock and pull on end of strap with pliers. Use about as much force as would be required to lift 15 lbs. Cut excess strap flush to 1/16" from lock.



- (7) Mount coil bracket in position chosen. If crossmember is used, drill $3/16''$ holes and attach with $1/4''$ tapping screws. If transmission bolt is used, drill bracket as required and tighten bolt to 25 ft. lbs. torque. Bend bracket over edge of case to prevent turning. Re-check gap between coil bolt and magnet.
- (8) Feed coil wires up to where they can be reached in engine compartment, then lower vehicle. Route wires to firewall, avoiding all hot, sharp, or moving parts. Use beaded wire ties as needed.

Drawings below and in right column show various installations for front drive vehicles.

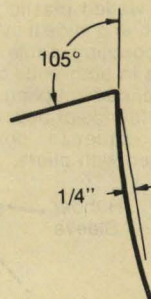
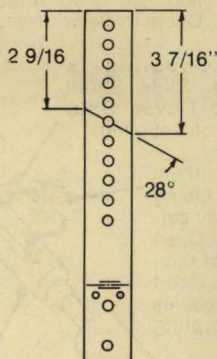
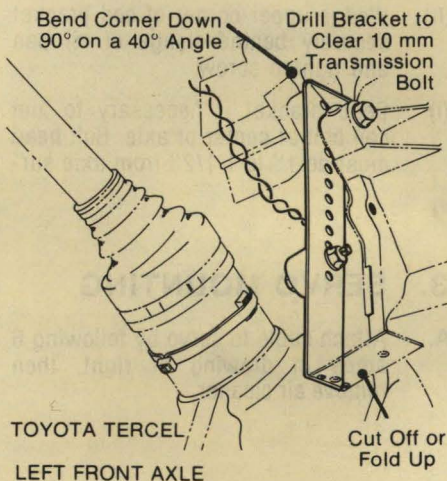


MAZDA GLC—Sedan

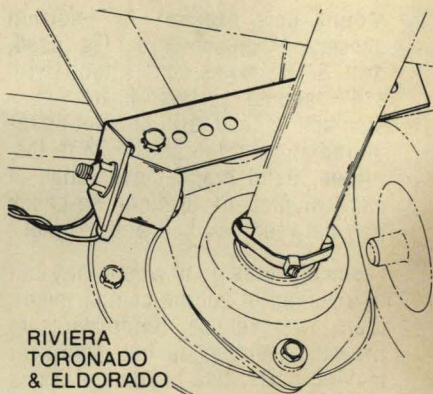
Stamped Nut

- (9) Coil mounting on Riviera, Toronado, and Eldorado is difficult, but may be attached as follows:

- (a) Flatten bend in coil bracket.
- (b) Draw line through 6th hole at 62° from right edge (28° up from horizontal).
- (c) Bend top down toward you on that line. Go past 90° to 105° .
- (d) Bend bottom away from you until you have a $1/4''$ high bow.



- (e) Position coil over end hole in bracket so wires run toward bend. Attach with 1/4" x 1 1/2" long bolt and stamped nut. Tighten to 20-38 inch lbs (2.3-4.3 N·m).
- (f) Use any No. 10 screw 1/2" long or longer, nut, and lockwasher to attach coil bracket to right front axle support bracket. Put lock-washer under bolt head. Put screw through second hole from bend.
- (g) Remove existing tapping screw holding hose clamp and replace with No. 10 screw and nut.
- (h) Wedge upper corner of coil bracket securely behind flange of oil pan and tighten screw.
- (i) Bend bracket if necessary to aim coil bolt at center of axle. Bolt head must be 1" to 1 1/2" from axle sur-

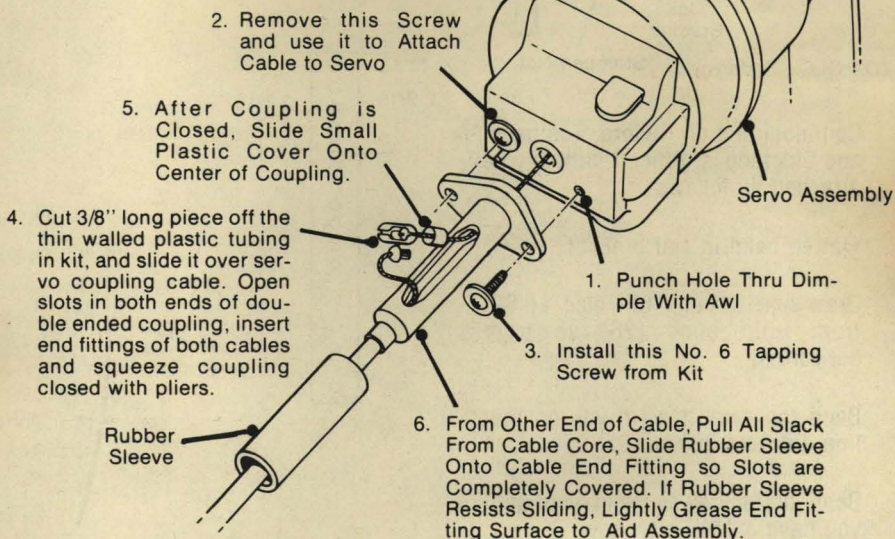


face. Mark spot on axle for magnet in line with coil bolt.

- (j) Install magnets (2) and coil wires in accordance with paragraphs (5), (6) and (8) under **B** Pages 10 and 11.

3. SERVO MOUNTING

- A. Attach cable to servo by following 6 steps in drawing at right, then remove air cleaner.



B. Servo cable pulls on the carburetor lever or pulley segment (air throttle valve on diesel or fuel injected engines) just like the existing throttle cable; therefore, it should be routed alongside the throttle cable - it may even be attached to the throttle cable later. Hold servo cable in this position so ball on end of cable is about 3 inches from end of existing throttle cable.

C. Now swing servo around to any open area large enough to hold it. It should be located where it will not interfere with oil checks and other engine services, Shock tower or fender inner panel are usually good locations. Drawing on next page shows various ways to mount servo and route cable. Left side of engine compartment is shown, but right side is just as good, however wire length should be considered. Heavy strap bracket can be bent, twisted and shortened. Top left diagram shows servo mounted with stud through side panel so bracket is not used.

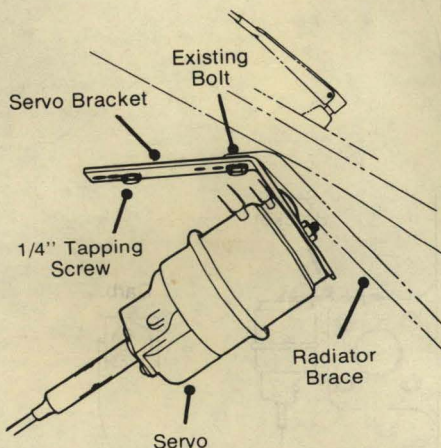
NOTE: In operation, servo makes a chattering sound which may be heard in the driver's compartment if servo is mounted on the firewall.

D. Cable should be routed without any bends smaller than a 3" radius. It should clear all sharp, hot, or moving objects. If cable is too long because servo is mounted close to carburetor, cable can be routed in a 360° loop (6" dia. min.) and still function properly. (See upper right-hand diagram next page.)

E. If shock tower stud is to be used, remove existing nut and install bracket, then replace nut. If servo will be mounted on a body panel, use bracket as template to mark selected spot for two 3/16" holes. Attach bracket with 1/4 tapping screws.

F. Put servo stud through proper hole in bracket, put eyelet terminal of servo's green grounding wire over stud, turn servo so vacuum fittings are in direction for best hose routing, then secure servo with 1/4-20 nut and lock washer assembly.

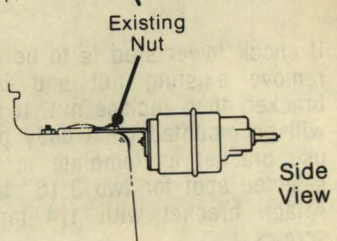
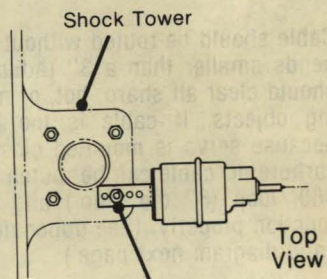
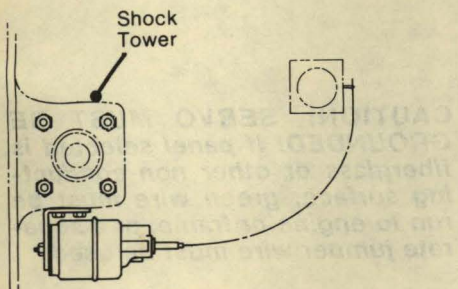
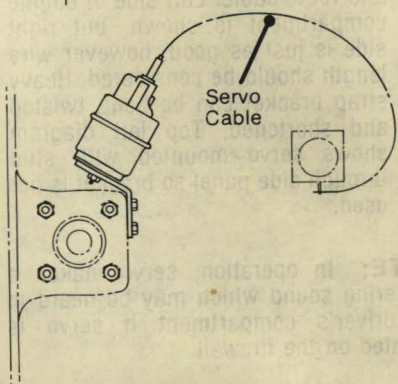
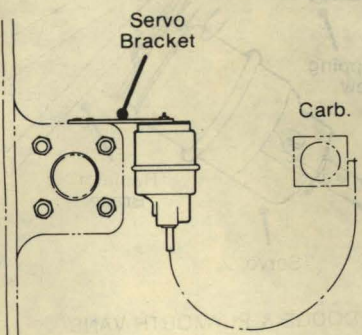
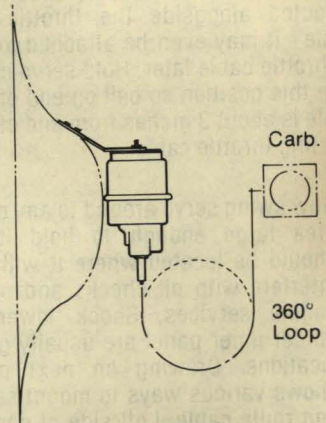
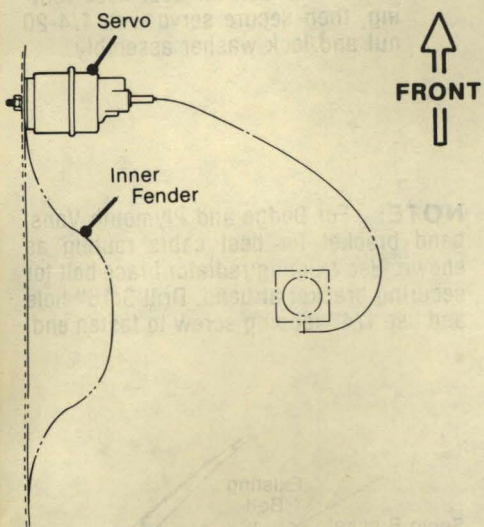
NOTE: For Dodge and Plymouth Vans, bend bracket for best cable routing as shown. Use existing radiator brace bolt for securing bracket at bend. Drill 3/16" hole and use 1/4" tapping screw to fasten end.



DODGE & PLYMOUTH VANS

CAUTION: SERVO MUST BE GROUNDED! If panel selected is fiberglass or other non-conducting surface, green wire must be run to engine or frame, or a separate jumper wire must be used.

THESE DRAWINGS SHOW VARIOUS SERVO MOUNTINGS AND CABLE ROUTINGS ON LEFT SIDE OF ENGINE COMPARTMENT.



4. CARBURETOR OR AIR VALVE HOOK-UP

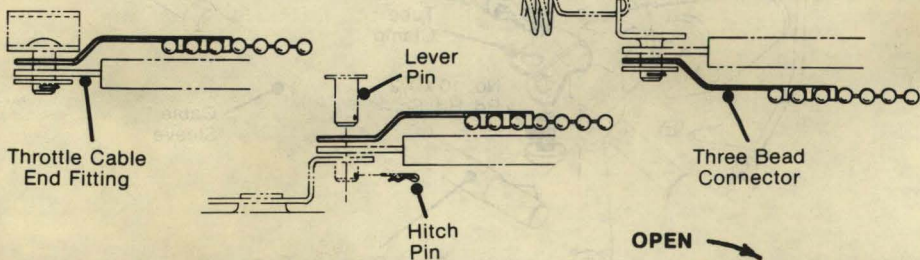
Existing throttle cable opens the carburetor or air throttle valve by pulling on either a lever (described in Section A below) or a pulley segment (described in Section B).

A. Lever Type Throttle Actuator

There are three ways to attach bead chain to throttle lever: 1) three-bead connector No. 124, 2) eyelet type connector and tube clamp, or 3) Ford-designed connector.

(1) Three-Bead Connector No. 124

- (a) Wherever a pin (fixed or removable) is the attaching point for connecting throttle cable to throttle lever, this connector can be used. To attach chain to connector, use three end beads as shown.
- (b) Remove clip or pin which retains throttle cable, and washer if there is one. Install 3-bead connector on the same side of the throttle cable end fitting as the servo cable will be attached. The two cables must not cross. Bend connector so it clears end fitting on throttle cable. Where distance is close, connector can be shortened by a double fold. There should be 5 or 6 free beads between connector and ball on end of servo cable so it can flex when accelerator is operated by foot.

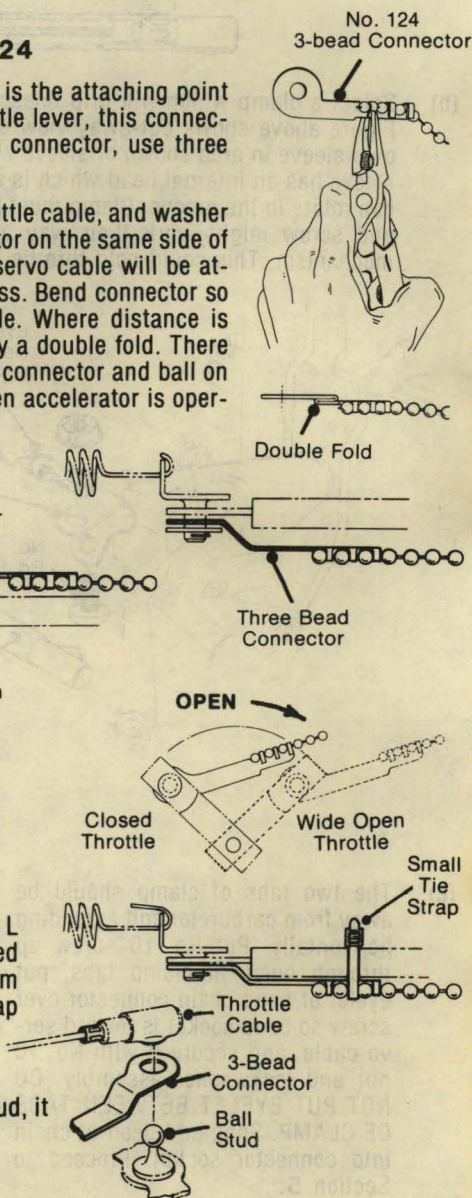


NOTE: On G.M. V-6 engines, connector must be installed as shown at right (edge with beads upward) so carburetor lever will not hit it before reaching wide open throttle.

NOTE 2: On earlier G.M. Diesel and 5.0 L gasoline V-8 engines, connector must be tied to sleeve of throttle cable to keep it from snagging on the EGR valve. A small tie strap in kit may be used for this purpose.

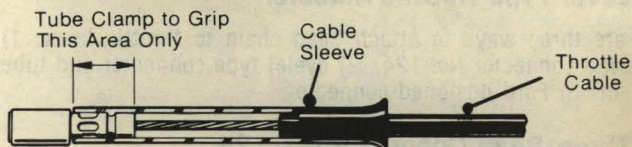
NOTE: To use the connector on a ball stud, it may be necessary to enlarge hole.

- (c) Proceed to Section 5.

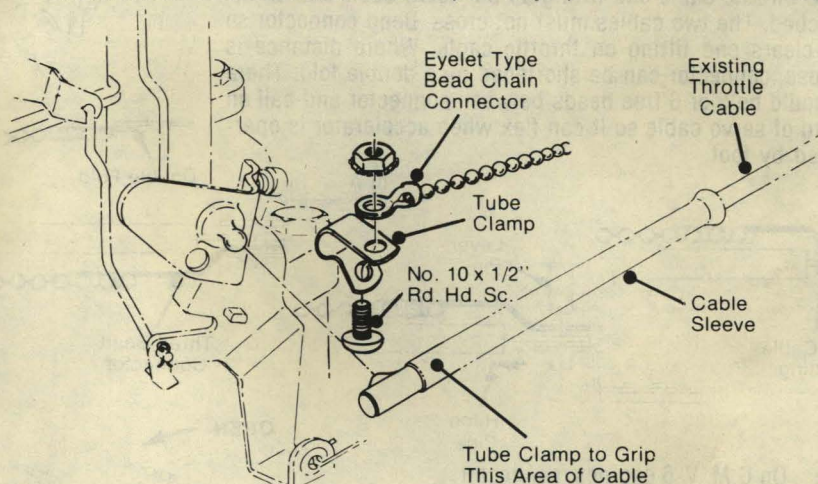


(2) Eyelet Type Connector and Tube Clamp

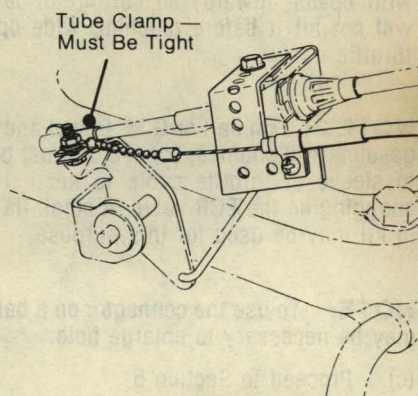
- (a) There may be applications in which the 3-bead connector cannot be used, such as when the connecting point is a ball stud, so the connector can be installed on one side of throttle cable, only. If servo cable can be routed only on the other side, then the tube clamp (usually the 5/16" size) must be used. The cables should not cross.



- (b) Select a clamp which will grip telescoping sleeve on throttle cable very tightly. Figure above shows cut-away view of cable and sleeve. Open clamp and put it over sleeve in area shown or sleeve will be crushed and restrict cable travel. The sleeve has an internal bead which is snapped into a groove on the socket, thus it can rotate in the groove. Clamp must be tight enough to prevent this or the clamp and screw might work their way around and become lodged in the throttle mechanism. This could hold throttle part way open and **must not happen**.

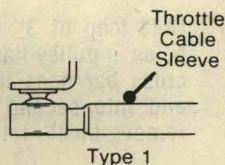


- (c) The two tabs of clamp should be away from carburetor and extending horizontally. Put No. 10 screw up through holes in clamp tabs, put eyelet of bead chain connector over screw so bead socket is toward servo cable, and secure it with No. 10 nut and lockwasher assembly. **DO NOT PUT EYELET BETWEEN TABS OF CLAMP**. Snap end bead of chain into connector socket. Proceed to Section 5.

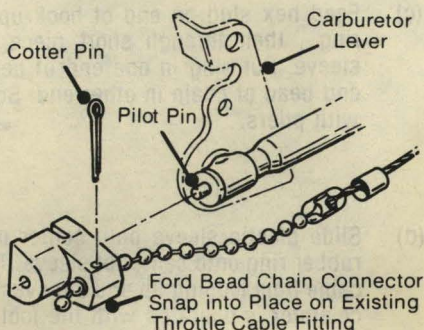


(3) Ford Designed Connector

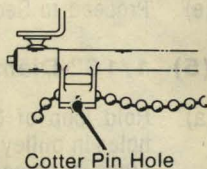
- (a) A Ford may have any one of several types of throttle cable ends. Type 1 is found on older vehicles. This type has no pin in the end of the ball socket, so a tube clamp or a 3-bead connector must be used. They are described in paragraphs (1) and (2) of Section A above.



- (b) A later design was like the first except a pin was located in end of cable. For this type a plastic connector is supplied which goes over pin and then snaps into place straddling neck in back of socket. Feed bead chain through hole from back to front until two or three beads show in front. Put cotter pin down through small hole and spread it.



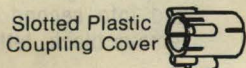
- (c) On many current model Fords, the connector and sleeve are molded as one piece. Thread bead chain through connector from back to front until two or three beads can be seen from front. Put cotter pin down through small hole and spread it.



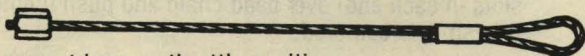
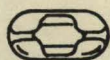
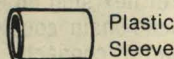
- (d) Proceed to Section 5.

B. Throttle Operated by Pulley Segment

- (1) Measure diameter of existing throttle cable's stranded core. If it is $1/16''$ diameter, get small slotted plastic coupling cover out of kit, and also cut $3/8'' - 7/16''$ long piece off the thin-walled plastic sleeving. If cable core is $3/32''$ diameter, cut a piece $1/8''$ wide off the largest piece of rubber hose, and cut two pieces of thin-walled plastic sleeving $3/8'' - 7/16''$ long.



- (2) From kit, remove two double-ended bead chain couplings. Open slots in both ends wide enough to pass the link between beads (about .040 - .060). A small screwdriver or side cutter pliers may be used. Also remove bead chain and the 3" long cable with a loop in one end and a hex slug on the other end.

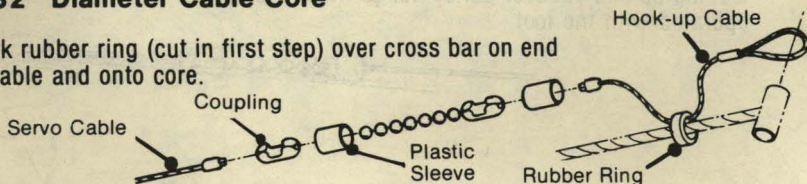


- (3) Block carburetor pulley segment in open throttle position and detach cable.

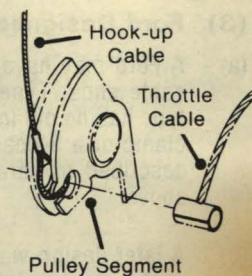
Looped Hook-up Cable

(4) $3/32''$ Diameter Cable Core

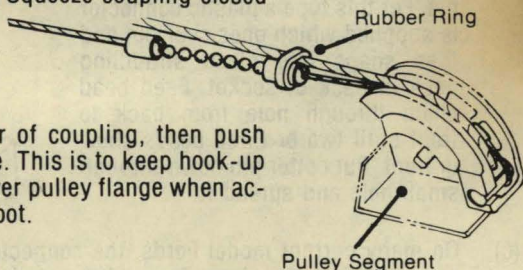
- (a) Work rubber ring (cut in first step) over cross bar on end of cable and onto core.



- (b) Hold loop of 3" hook-up cable in groove between two holes in pulley flanges, and re-attach throttle cable. Cable cross bar goes through slotted hole, then through loop and into second hole. Lay both cables in pulley and remove block, letting throttle close.



- (c) Feed hex slug on end of hook-up cable through rubber ring, then through short piece of thin-walled plastic sleeve. Put slug in one end of bead chain coupling and end bead of chain in other end. Squeeze coupling closed with pliers.

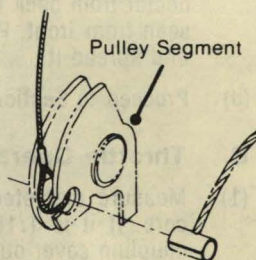


- (d) Slide plastic sleeve onto center of coupling, then push rubber ring onto center of sleeve. This is to keep hook-up cable from looping up and out over pulley flange when accelerator is operated with the foot.

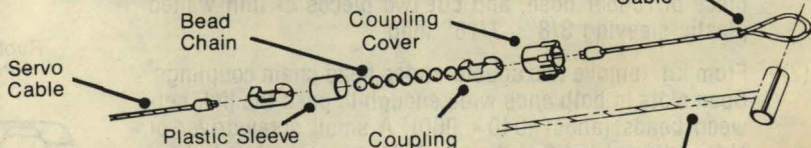
- (e) Proceed to Section 5.

(5) 1/16" Diameter Throttle Cable

- (a) Hold loop of 3" hook-up cable in groove between two holes in pulley flanges, and re-attach throttle cable. Cable cross bar goes through slotted hole, then through loop and into second hole. Lay both cables in pulley and remove block, letting throttle close.

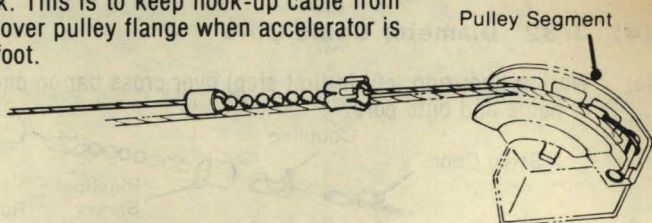


- (b) Put hex slug on end of hook-up cable into double-ended bead chain coupling. Put end bead of bead chain in other end of connector. Squeeze coupling closed with pliers.



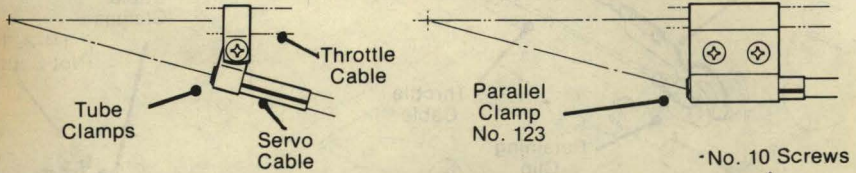
- (c) Slide 3/8" long molded plastic coupling cover (with 3 slots in each end) over bead chain and push it onto coupling so it is centered.

- (d) On side of coupling cover is a hook. Snap core of throttle cable into this hook. This is to keep hook-up cable from looping up and out over pulley flange when accelerator is operated with the foot.

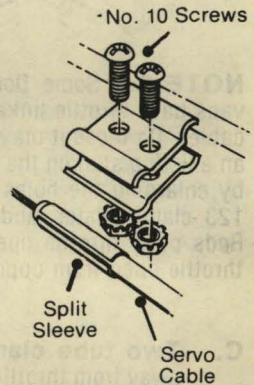


5. SERVO CABLE ATTACHMENT

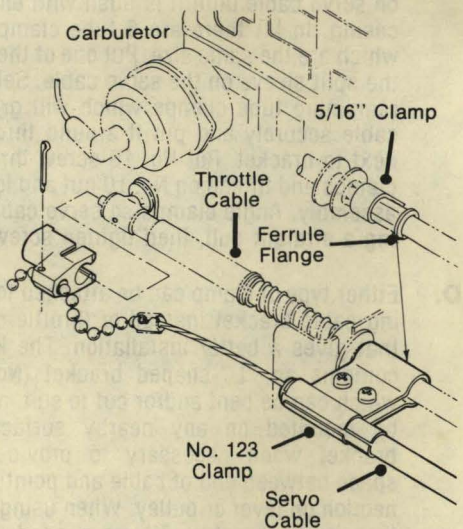
- A.** End of servo cable casing must be firmly fixed, and should pull as nearly in line with throttle movement as possible. Ideally, servo cable would be clamped directly to throttle cable, but throttle cable bracket prevents this. Two means for clamping the cable are provided - the parallel clamp and the two tube clamps. As shown below, two tube clamps let you aim cable at the point of connection, while with the parallel clamp, the cable may pull at an angle.



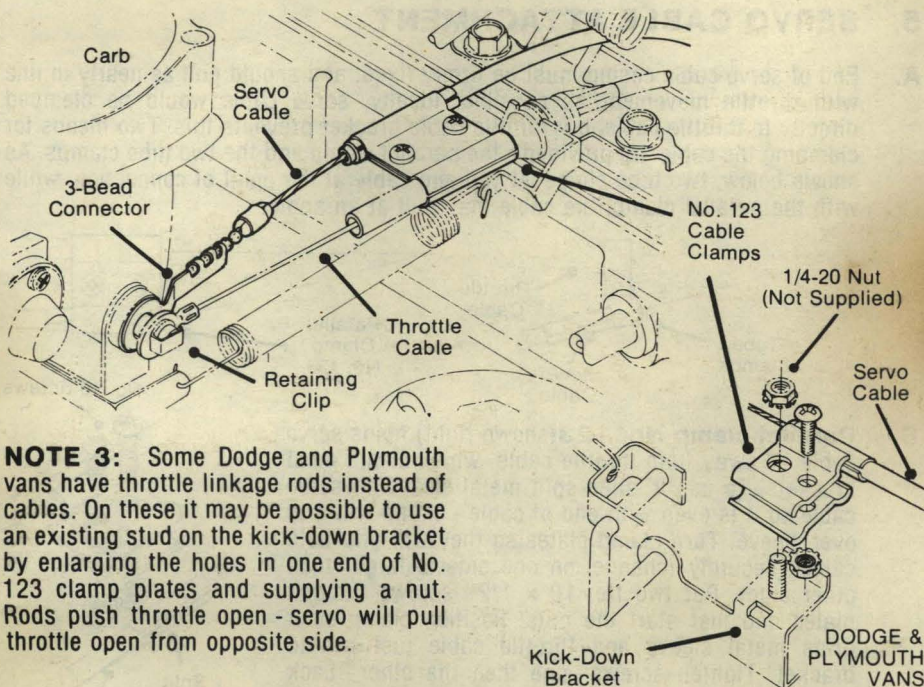
- B. Parallel clamp No. 123** (shown right) holds servo cable 1" away from throttle cable, which clears most brackets. To use it, slide split metal sleeve on servo cable so it is even with end of cable - clamp will grip over sleeve. Turn clamp plates so they will grip both cables securely (channel on one side is larger than other side). Put two No. 10 x 1/2" screws through plates and just start the nuts. Position clamp so it grips metal sleeve and throttle cable just behind bracket. Tighten screws - one then the other - back and forth until plates touch. If clamp is moved to another spot, plates should be straightened.



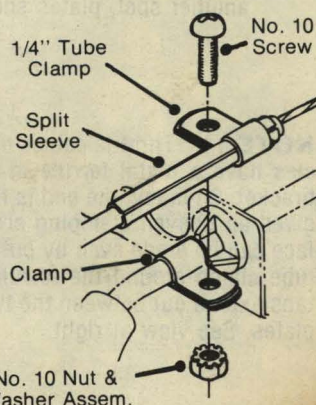
NOTE 1: Throttle cables on Ford vehicles have a metal ferrule in back of the bracket. On many, the end is flared, which gives an uneven clamping area. The surface can be made even by putting a 5/16" tube clamp around the ferrule so its two tabs extend out between the two clamping plates. See view at right.



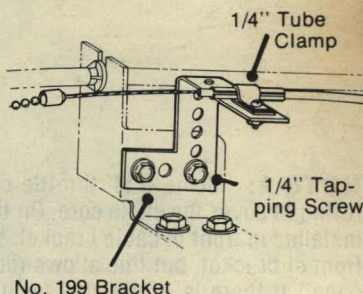
NOTE 2: Some G.M. throttle cables have a telescoping sleeve attached to the end fitting to cover the cable core. On these vehicles, clamp holding servo cable must not be installed in front of cable bracket. Where there is no sleeve, servo cable clamp may be in front of bracket, but this allows room for only 3 or 4 free beads as shown (at top of next page.) If there is a threaded ferrule, clamp on that.



C. Two tube clamps hold servo cable 13/16" away from throttle cable. Slide split metal sleeve on servo cable until it is flush with end of cable casing. In kit there are 5 tube clamps - two of which are the same size. Put one of these around the split sleeve on the servo cable. Select one of remaining tube clamps which will grip throttle cable securely and put it around throttle cable next to bracket. Put No. 10 screw through both clamps and thread on No. 10 nut and lockwasher assembly. Angle clamps so servo cable is making a straight pull, then tighten screw.

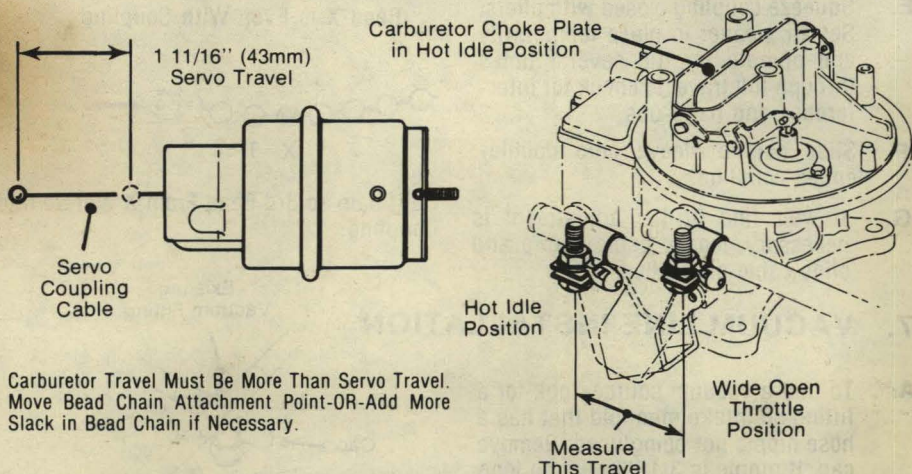


D. Either type of clamp can be attached to existing cable bracket instead of throttle cable if that gives a better installation. The kit also contains an "L"-shaped bracket (No. 199) which can be bent and/or cut to suit, and can be mounted on any nearby surface. Use bracket when necessary to provide more space between end of cable and point of connection on lever or pulley. When using the 3" long hook-up cable, 7" are needed. The 3-bead connector requires about 5 1/2". Approximately 3" are necessary for the eyelet type connector. To mount bracket No. 199, drill two 3/16" holes and attach with 1/4" tapping screws.



6. SERVO CABLE ADJUSTMENT

- A.** Servo's full travel is $1\frac{11}{16}"$ (43mm). Travel of lever or pulley segment at point of connection must be more than $1\frac{11}{16}"$ or slack must be added to chain link. If lever or pulley reaches its stop before servo does, servo is powerful enough to break its cable or strip off a bead. To get proper adjustment, measure straight-line travel of lever or pulley segment at point of attachment - 3-bead connector, eyelet-type connector, Ford connector or looped cable. A measuring scale is inside front cover.



Carburetor Travel Must Be More Than Servo Travel.
Move Bead Chain Attachment Point-OR-Add More
Slack in Bead Chain if Necessary.

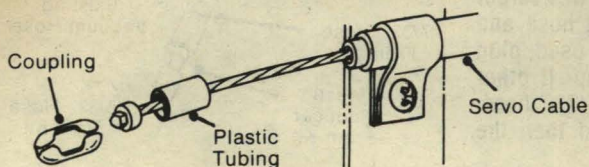
NOTE: If your vehicle has a carburetor which has a choke plate (shown in figure above), travel must be measured between "hot idle" position and "wide open throttle" position. Linkage adjusted to "cold idle" position will not let throttle close when engine warms up.

To set a cold carburetor for "hot idle", open throttle with one hand, hold choke plate vertical with other hand. Release throttle, then release choke plate. EACH TIME YOU MEASURE TRAVEL YOU MUST RESET "HOT IDLE" BECAUSE OPENING THE THROTTLE LETS CHOKE PLATE RETURN TO COLD IDLE.

- B.** Take measurement from Step A to table at the right and mark in right hand column the number of beads to add.

- C.** With small blade screwdriver, open both ends of double-ended bead chain coupling. Slide $\frac{3}{8}"$ long piece of thin-walled plastic tubing over ball on end of servo cable, then put ball in end of coupling.

Connector Travel Measured in Above Step	No of Beads to Add
1" to $1\frac{1}{4}"$	4
$1\frac{1}{4}"$ to $1\frac{1}{2}"$	3
$1\frac{1}{2}"$ to $1\frac{3}{4}"$	2
$1\frac{3}{4}"$ or more	1



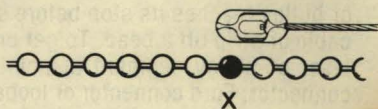
D. With all slack removed, hold bead chain alongside double-ended coupling on servo cable. Select bead which would go easily into coupling, then increase length by number of beads marked in table above. Cut chain to this length and put end bead in coupling.

E. Squeeze coupling closed with pliers. Set air cleaner in place temporarily and operate throttle several times through full travel to check for interference and hang-ups.

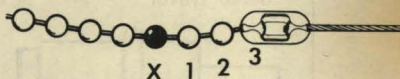
F. Slide plastic sleeve onto double-ended coupling.

G. If you find further adjustment is necessary, loosen cable clamp and slide cable as needed.

EXAMPLE: If Measurement Shows Connector Travel is $1 \frac{3}{8}$ ", Table Shows 3 Beads Should Be Added.



Bead X is Even With Coupling

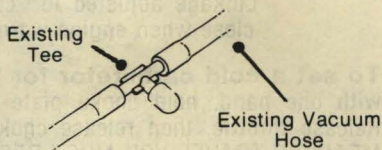
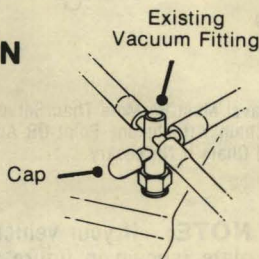


Cut Chain so 3rd Bead From X Will Go Into Coupling.

7. VACUUM LINE INSTALLATION

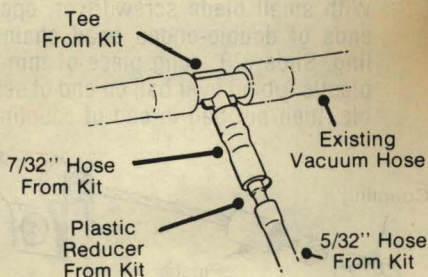
A. To find a vacuum source, look for a fitting on intake manifold that has a hose nipple not being used. Remove cap. If nipple is $\frac{3}{16}$ ", plug on long $\frac{5}{32}$ " hose. If nipple is $\frac{1}{4}$ ", plug on short piece of $\frac{7}{32}$ " hose, push in the little plastic reducer, and then $\frac{5}{32}$ " hose.

Or, if there is an existing tee in one of vacuum lines that has a cap on its center tap, you can use that as a vacuum source by removing cap and doing same as above.



NOTE: The Speed Control will not work if you choose a hose with "ported" vacuum. Ported vacuum comes from above the carburetor throttle plate and operates the distributor spark advance and the EGR valve. To check, run engine at idle, disconnect hose and put finger over opening. Choose source which has good suction at idle.

B. If there is no fitting or tee you can use, tee into existing vacuum hose with $\frac{3}{16}$ ", $\frac{1}{4}$ ", $\frac{5}{16}$ " or $\frac{3}{8}$ " tee supplied. Tee must be $\frac{1}{32}$ " larger than inside of hose. Cut hose and put in tee. If $\frac{3}{16}$ " tee is used, plug $\frac{5}{32}$ " hose on center tap. If other tees are used, plug on $\frac{7}{32}$ " hose, then plastic reducer, and then the $\frac{5}{32}$ ".



WARNING

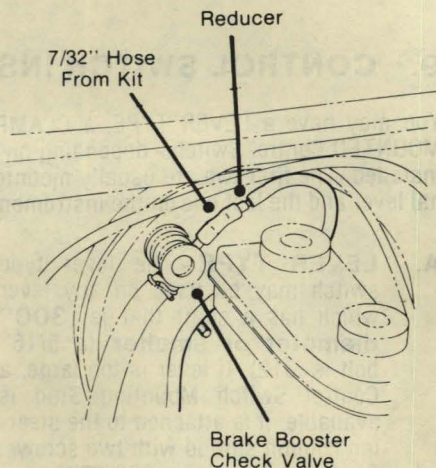
If no other source is available, engine vacuum can be obtained from the large hose to the vacuum brake booster - **BUT** - tee'ing into this hose is a safety-related action. All connections in or to this hose should be glued or have hose clamps.

Chrysler vehicles with power brakes usually have a 1/4" vacuum fitting on the booster check valve. Many imports have the check valve in the large hose. If you tee into this line, you **MUST** do so between the check valve and the manifold connection.

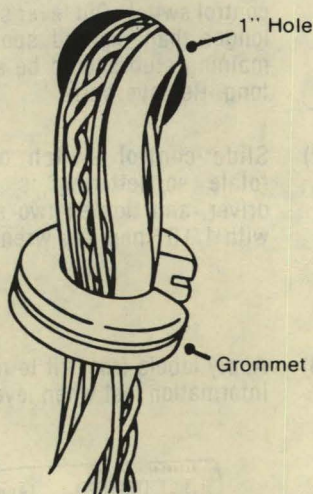
- C. Run hose to servo so it won't be close to anything hot and so it won't be kinked, pinched, cut or rubbed. Use beaded tie straps where needed. Cut to right length and push it onto smaller servo nipple
- D. Push 9/32" hose onto larger servo nipple and run it to where steering column comes through firewall.

8. FIREWALL GROMMET INSTALLATION

- (a) Hose and wires need a 1" hole to pass through firewall. You may find one nearby such as the speedometer cable hole, or a small one you can file larger. If you find the right size hole in the right place, remove rubber grommet. If not, drill, saw or punch 1" hole - a couple of inches to the left and slightly higher than steering column is usually a good place. Check inside before drilling or sawing so you don't hit anything.
- (b) Pass four-pin and two-pin servo harness connectors through hole, then blue and grey wire connector from pick-up coil, and finally the 9/32" hose.



GOOD VACUUM SOURCE ON MOST CHRYSLER VEHICLES

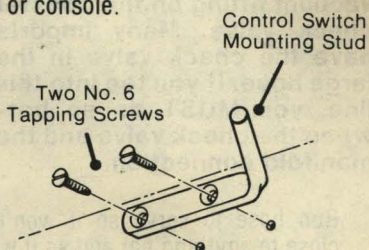


- (c) Cut grommet from center out, put it around hose and wiring, and work its groove into place around edge of hole in firewall.
- (d) Put any parts of vehicle removed to make installation (air filter, etc.) back in place and work throttle full throw to check for interference. If nothing rubs or catches complete installation. Work under hood is finished.

9. CONTROL SWITCH INSTALLATION

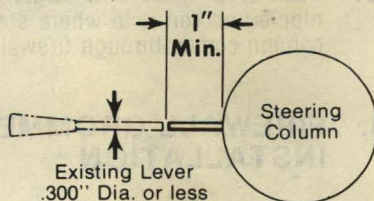
You may have a LEVER TYPE, a CLAMP-ON, or a PANEL MOUNTED Control Switch - depending on which kit is being installed. The first two are usually mounted on the turn signal lever and the last one on the instrument panel or console.

- A. LEVER TYPE** - The lever type switch may be used on any lever which has a shaft that is **.300" diameter or smaller** (a 5/16" bolt is .312). If lever is too large, a Control Switch Mounting Stud is available. It is attached to the steering column shroud with two screws. Stud part number is 250-3045.

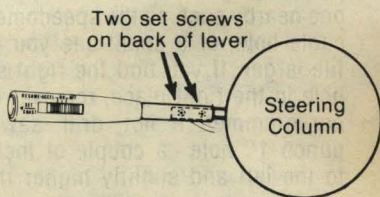


CAUTION - A multi-function lever which has a small shaft that rotates inside an outer tube, or a lever which has electrical wires routed through it must not be cut.

- (1) Hold control switch so button end is even with end of existing lever. Mark existing lever at other end of control switch. Cut lever so it is 3/4" longer than marked spot. The remaining stub should be at least 1" long. Remove burrs.



- (2) Slide control switch onto stub, rotate so lettering is visible to driver, and tighten two set screws with 1/16" hex key wrench.



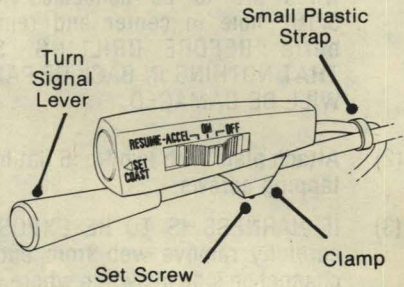
- (3) Apply labels from kit to replace any information lost when lever was cut.



LABELS

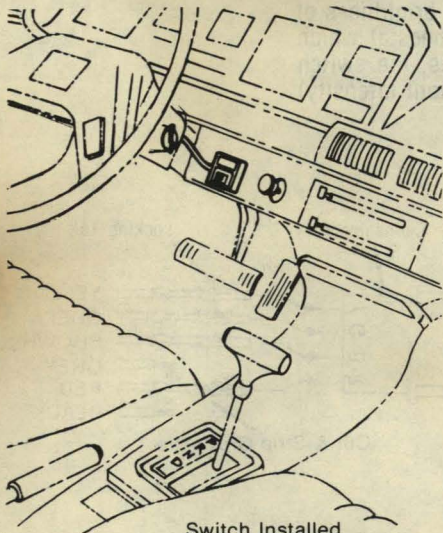
- (4) Use 4" unbeaded tie strap to fasten switch electrical harness to lever stub. Route harness down outside of steering column and back under instrument panel. It will be connected to main harness later.
- (5) Proceed to Section 10.

B. CLAMP-ON TYPE — The clamp-on type control switch has a clamp which fits any round shaft from 3/16" to 9/32" diameter. A web in one end of the "U" of the clamp can be carved out so it will fit a 5/16" lever. A larger clamp in kit will fit a shaft from 11/32" to 7/16" dia. The stud described in paragraph A on opposite page can be used with this switch.

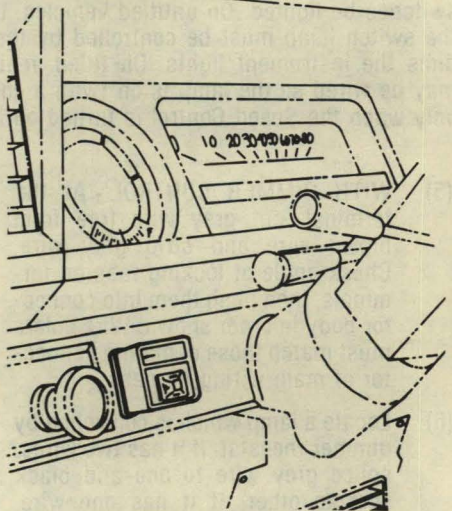


- (1) Set switch body on lever, slide clamp from underneath into grooves of switch so two sharpest points of clamp are below slide button pointing outboard. Move switch as far outboard as possible and turn it so lettering is visible to driver, then tighten clamp set screw with 1/16" hex key wrench.
- (2) Use 4" unbeaded tie strap to fasten switch electrical harness to lever. Route harness down steering column and back under instrument panel. It will be connected to main wiring harness later.
- (3) Proceed to Section 10.

C. PANEL MOUNTED TYPE - This type switch can be mounted on any flat surface within reach and sight - instrument panel or console. The electrical harness may be hidden or exposed.



Switch Installed
with Harness Exposed

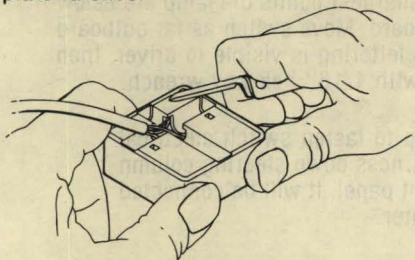
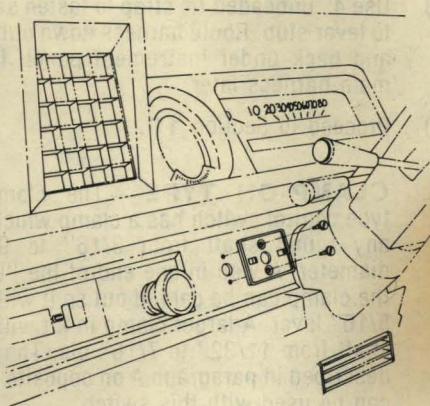


Switch Installed
with Harness Hidden

- (1) At selected location, hold switch mounting plate so two latching fingers are in a horizontal line, then mark and drill two 1/8" holes. If wires are to be concealed, drill 5/16" hole in center and remove burrs. **BEFORE DRILLING, SEE THAT NOTHING IN BACK OF PANEL WILL BE DAMAGED.**

- (2) Attach plate with two No. 6 flat head tapping screws.

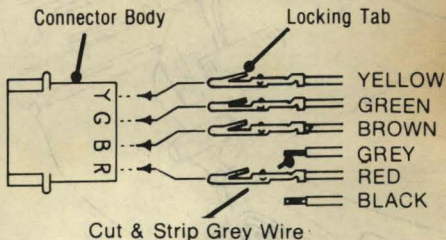
- (3) IF HARNESS IS TO BE EXPOSED, carefully remove web from end of channel on side of switch where wiring will exit. Route harness through channel and press switch onto mounting plate latches.



- (4) IF HARNESS IS TO BE HIDDEN, feed it through 5/16" hole and press switch onto mounting plate latches.

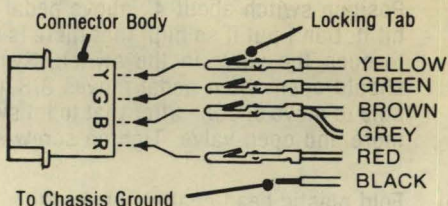
NOTE: Federal regulations require that all panel mounted switches be lighted. On untitled vehicles, the brightness of the switch lamp must be controlled by the rheostat which dims the instrument lights. On titled vehicles, the switch may be wired so the lamp is on (with a constant intensity) only when the Speed Control is turned on.

- (5) WITH DIMMER CONTROL - At the terminal, cut grey wire free from brown wire and strip grey wire. Check angle of locking tabs on terminals, then push them into connector body in order shown. Wire colors must match those of mating connector of main wiring harness.



- (6) Locate a lamp which is controlled by dimmer rheostat. If it has two wires, splice grey wire to one and black wire to other. If it has one wire, splice grey wire to it and connect black wire to chassis ground.

- (7) **WITHOUT DIMMER CONTROL** - Check angle of terminal locking tabs, then push them into connector body in order shown. Wire colors must match those of mating connector of main wiring harness.



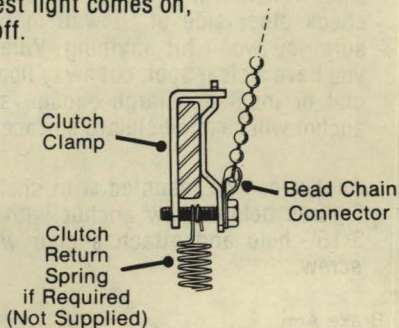
- (8) Attach black wire to chassis ground.

NOTE: To find chassis ground, turn ignition on and touch one lead of test light to a fused terminal at fuse panel. Touch other lead to unpainted or plated metal parts. When test light comes on, you have found chassis ground. Turn ignition off.

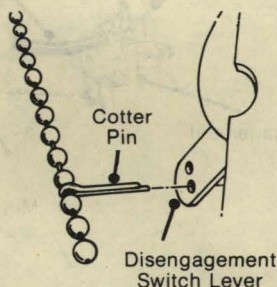
10. DISENGAGEMENT SWITCH ATTACHMENT

NOTE: Some brake and clutch arms have such light return springs that when the disengagement switch is added, they won't come back all the way. You can fix this problem by adding a spring like a throttle return spring. Hook one end to the back of the dash, then stretch it and hook the other end to the brake or clutch arm.

- A-** Open cotter pin enough to straddle bead chain link. Push link between 3rd and 4th beads into cotter pin loop. Close cotter pin and put through one of holes in disengagement switch lever. Spread cotter pin and cut legs short so nothing snags on them.

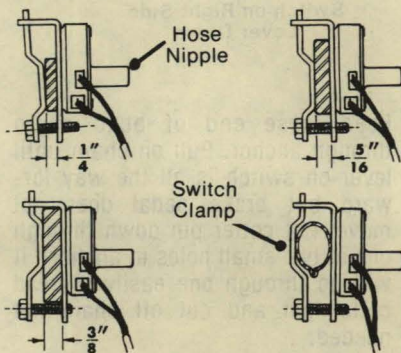


If you have an automatic transmission, follow steps under B; if you have a manual transmission, start with C.



B- Automatic Transmission

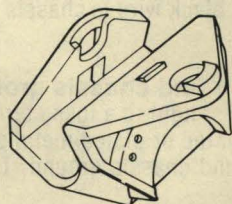
- (a) Mount switch with lever down on right side of brake arm, or lever up on left side of arm - whichever side gives most room for switch wires and vacuum hose. Check thickness of brake arm, then look at Figures at right to see which way to turn switch clamp. If brake arm is too thick or too wide, flatten clamp a little. Attach with No. 8-32 x 3/4 hex head screw.



Sections Through Brake or Clutch Arms Show How Switch Clamp Can Be Turned End For End, And Side For Side To Fit Most Sizes.

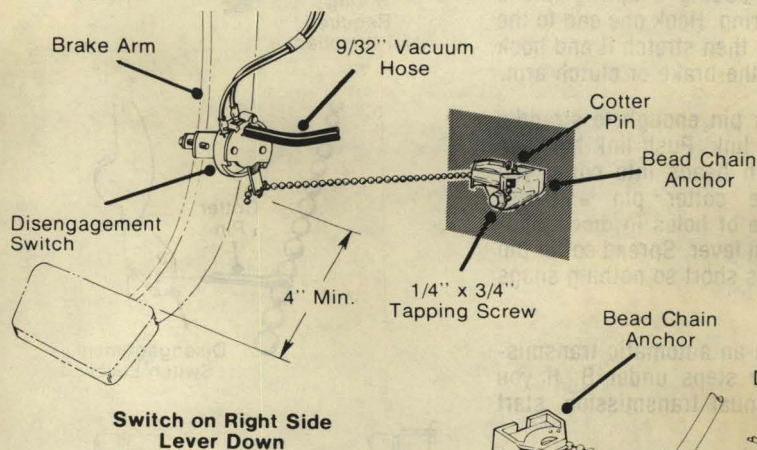
Position switch about 4" above pedal so driver's foot won't hit it. Don't put it so high that there is not enough movement to open the valve in the switch. Switch electrical contact should open when pedal moves $3/8$ - $1/2$ ". Pedal should be able to move enough after that to let switch lever swing $1/2$ " more and open valve. Tighten screw so switch won't slip.

- (b) Fold plastic bead chain anchor until it snaps together in an "L" shape. Find place on firewall for anchor which is about level with switch lever. A hole will be drilled there, so check other side of firewall to be sure you won't hit anything. When you have a clear spot, cut away floor mat or insulation large enough so anchor will be against hard surface.

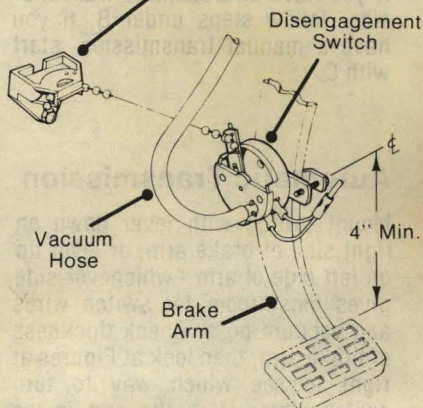


Bead Chain Anchor -
Partially Folded - With Shelf or
Pulley Part Down

- (c) Anchor can be mounted with shelf up, down, or sideways. Figures below show anchor with shelf up. Drill or punch $3/16$ " hole and attach anchor with $1/4$ " x $3/4$ " tapping screw.



- (d) Feed loose end of bead chain through anchor. Pull on chain until lever on switch is all the way forward but brake pedal does not move. Put cotter pin down through one of two small holes in anchor - it will go through one easily. Spread cotter pin and cut off chain not needed.



- (e) Push brake forward until there is slack in chain, then release pedal. If it doesn't return to its rest position,

loosen screw slightly, tap switch and re-tighten screw. If more adjustment is needed, change chain length at anchor. When pedal is at rest, switch lever must be no more than 1/8" from its front stop.

- (f) Cut hose coming from servo long enough to reach nipple on switch without kinking or rubbing on anything. Attach to switch and re-check brake return.

Go to section 11.

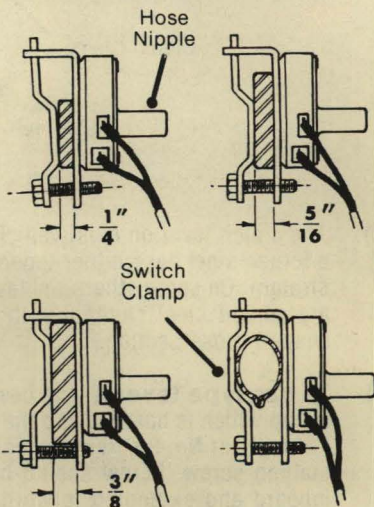
C- Manual Transmission

NOTE: The disengagement switch can be attached to the brake arm or the clutch arm. It should be mounted on the brake arm if possible because the brake pedal doesn't move as much as the clutch. When copper wires are flexed for a long time, they may become brittle.

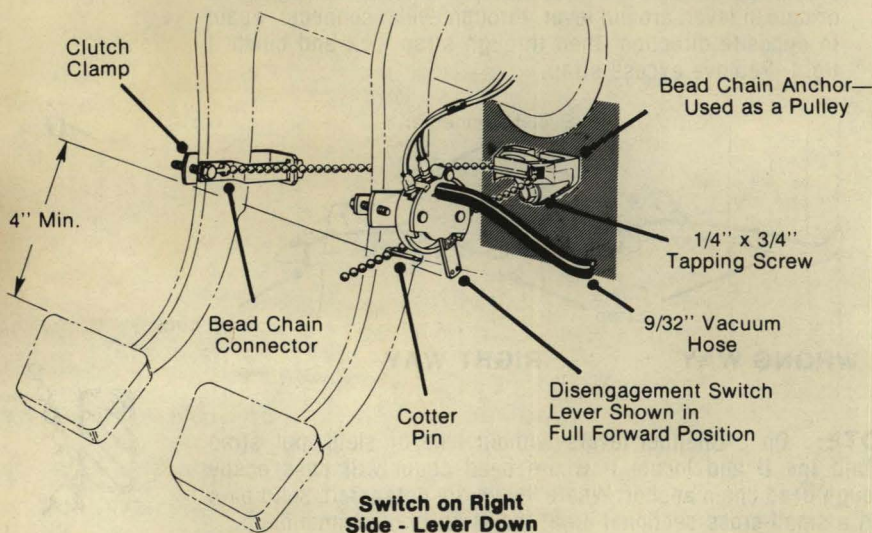
- (a) Mount switch with its lever down on right side of arm, or switch lever up on left side of arm - whichever gives most room for switch wires and vacuum hose. Check thickness of brake or clutch arm, then look at figures to right to see which way to turn switch clamp. If brake arm (or

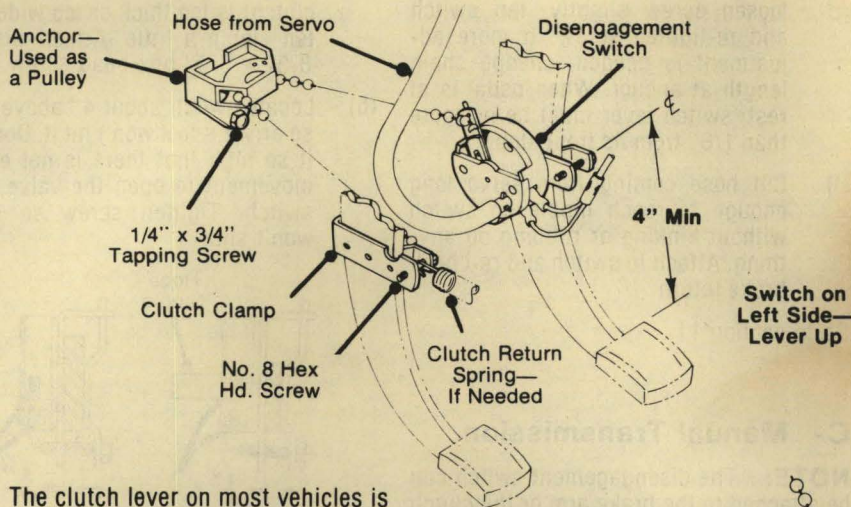
clutch) is too thick or too wide, flatten clamp a little. Attach with No. 8-32 x 3/4" hex head screw.

- (b) Locate switch about 4" above pedal so driver's foot won't hit it. Don't put it so high that there is not enough movement to open the valve in the switch. Tighten screw so switch won't slip.



Sections Through Brake or Clutch Arms Show How Switch Clamp Can Be Turned End For End, And Side For Side To Fit Most Sizes.

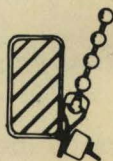
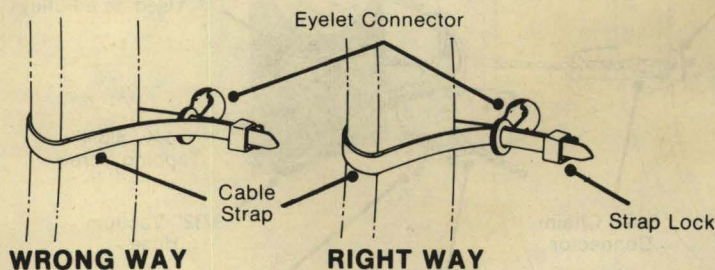
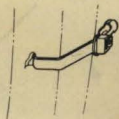
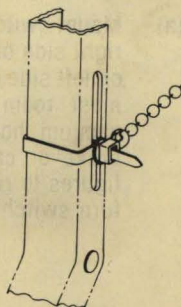
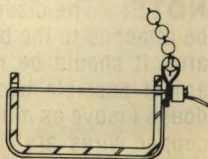




- (c) The clutch lever on most vehicles is a forged steel bar - either tapered or straight. On some others the lever is a stamped steel channel with a U-shaped cross section.

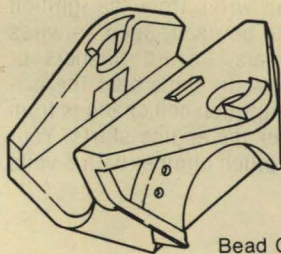
- (d) On **bar type levers**, it is best to use the two-piece metal clamp which is handled like the disengagement switch clamp. Put body of No. 8 screw through eyelet connector before installing screw. Screw should be to the rear with connector inboard and extending forward. Position clamp on lever so bead chain can pass easily through anchor. Tighten screw securely.

- (e) **U-Channel type levers** usually have a slot or a hole through which the 6 3/4" plastic strap is threaded. Here, too, feed strap through eyelet connector first, then through slots or hole in lever, around lever, through eyelet connector again in opposite direction, then through strap lock and cinch it tight. Remove excess strap.



NOTE: On U-Channel levers without hole or slots, put strap around the U and locate it where bead chain will pass easily through bead chain anchor. Where levers are untapered, solid bars with a small cross-sectional area, the strap is recommended.

- (f) Fold plastic bead chain anchor (which now will act as a pulley) until it snaps together in an "L" shape. Hold anchor against firewall so bead chain can move through it smoothly from brake arm to clutch arm. Mark around anchor and cut away insulation or floor mat so anchor will mount against hard surface. Anchor can be mounted with pulley part up, down or angled. Mark and drill or punch 3/16" hole. Check other side of firewall before drilling so you don't hit anything.



Bead Chain Anchor—
Partially Folded - With
Pulley Part Down

- (g) Feed bead chain through anchor and attach anchor to firewall with 1/4" x 3/4" tapping screw. If chain movement feels rough, lubricate with vaseline.
- (h) Pull on bead chain until switch lever is all the way forward but not enough to move pedal. Hold chain next to connector on other arm and pick bead which is even with connector pocket. Cut chain to that length and snap end bead into connector.
- (i) Press and release each pedal and check to see that each returns to its rest position. Switch lever must be no more than 1/8" from its front stop when pedals are at rest. For small adjustments, loosen screw, tap clamp forward or backward, and re-tighten screw. For large adjustments, change beads at switch lever.
- (j) Cut hose coming from servo long enough to reach nipple on switch without kinking or rubbing on anything. Attach hose to switch and re-check return of both pedals.

the radio wires and coaxial cable as practical. The radio should be wired directly to the battery ground connection and the standing wave ratio of the antenna should be as low as possible.

- (a) To find a place to get electrical power you will need to "ground" one lead of your test light (or voltohmmeter). Find electrical ground by turning on the ignition switch and touching one lead to a fused terminal at fuse panel; touch other lead to unpainted metal part of vehicle. The metal you touch to make test light come on, is ground. Bracket for parking brake lever is usually a good ground. Turn ignition switch off.

NOTE: Some fuse panels are behind shields which must be removed first. On other vehicles the screws that mount the panel must be removed to get to the fuses.

- (b) Power for your Speed Control must be from a "switched" source. "Switched" means one controlled by the ignition switch. Touch one test light lead to the ground found in Step (a). Touch other lead to terminal of a wire coming out of accessory section on fuse panel. Turn ignition ON - test light should come ON. If it does not, try other wires until you find one which lets you turn test light ON and OFF with the ignition switch. If you can't reach a terminal, push a sharp pointed tool or pin into the wire's insulation to the copper strands and touch tool or pin with test light lead.

11. THE WIRING HARNESS

CAUTION: *If a two-way radio is in the vehicle or is later installed, the speed control regulator should be located as far from the radio transceiver as practical (at least 3 inches) and the speed control wiring should be routed as far from*

NOTE: Certain wires from the ignition switch should not be used, such as wires to the turn signals, hazard flashers or windshield wipers. On some cars the primary wire to the ignition coil changes from 12 to 6 volts after the engine starts. Your test light will be much dimmer with 6 volts than with 12.

(c) Blue plastic connector is used to splice fused red wire of Speed Control main wiring harness to the switched power wire you just found. Be sure ignition switch is OFF or you may blow a fuse if your pliers touch "ground" while squeezing the tab.

(d) On the harness is a flat four-wire connector. Touch one test light lead to terminal of red wire at that connector and other lead to ground. Turn ignition switch to ON. If test light comes on, splice is good. Turn ignition switch OFF.

(e) The last step of this manual tells you to tie the harness and regulator box up out of the way under the dash. Plan now where you will put them before you get connections made. For instance, you will not want to run some of your wires under the steering column if the harness goes over the top. Wire colors match across all connections. See wiring schematic and wiring diagram which follow.

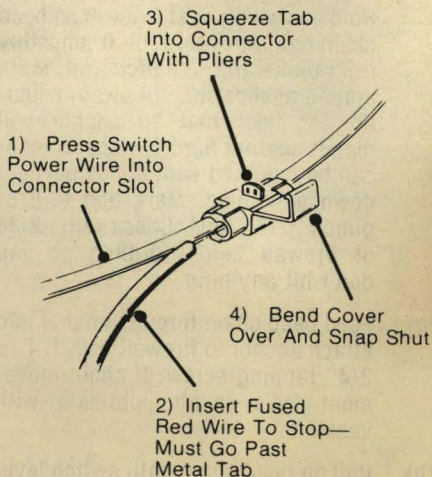
(f) Connect light green wire and violet wire from disengagement switch to light green and violet wires from harness.

(g) Plug two black connectors with blue and grey wires together.

(h) Connect 2-wire and 4-wire connectors from servo to matching white connectors on harness.

(i) Flat 4-wire connector used in Step (d) plugs into one from the control switch.

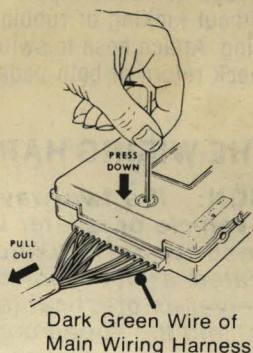
To Splice With Blue Plastic Connector, Follow These Four Steps:



12. ELECTRICAL CHECK

(a) To make the electrical check, the 14-terminal connector must be disconnected from the regulator. If you have already connected it, Figure below shows how to unplug it. The check may be made by using a test light (or volt-ohmmeter) and following the procedure on next page, or by using the NO. 250-3034. Electrical System Tester available through your dealer.

To unplug 14-terminal connector, press small screwdriver or rod through TERMINAL RELEASE hole in regulator while pulling on wiring harness connector.



ELECTRICAL CHECK PROCEDURE

Use a 12-volt Test Light To Perform These Checks

CONDITION	RESULTS	REMEDY
Ignition Switch OFF, Control Switch ON, Ground one lead of test light, touch other lead to each terminal of connector individually.	Light OFF; all terminals	None, system O.K.
	Test light ON at terminals 5, 7 and 14.	Red fused wire connected to wrong power source. Use a "switched" power source at fuse block. Test light should be "ON" when ignition switch is "ON" and "OFF" when ignition switch is "OFF".
Ignition Switch ON, Control Switch ON. Ground one test light lead. Touch other lead to each terminal of connector individually.	Test light ON at terminals 5, 7 and 14 only.	None, system is O.K.
	No light on any terminal.	Replace fuse, if blown. Connect red wire to ignition switched power source.
	No light on 5 or 7.	Check all brown wire connections.
	No light on 14.	Check dark green wire connections
Ignition Switch ON, Control Switch ON. Ground one test light lead. Press and hold SET/COAST button and touch other test lead to terminal 14 and then to 10.	Test light OFF at terminal 14 and on at terminal 10.	None, system O.K.
	Test light ON at terminal 14 or OFF at 10.	See Control Switch Check, Page 39. Check yellow wire connection.
Ignition Switch ON, Control Switch ON. Ground one test light lead. Press and hold slide switch to RESUME/ACCEL while touching other lead to terminals 10 and 14 individually.	Test light ON at terminals 10 and 14	None, system O.K.
	No light at terminal 10 and/or 14.	See Control Switch Check, Page 39.
Ignition Switch ON, Control Switch ON. Touch one test light lead to terminal No. 5 and other lead to terminal No. 13.	Test light ON; push brake and test light goes OFF.	None, system O.K.
	Test light OFF.	Adjust disengagement switch lever travel to get test light ON; OFF when brake or clutch pedal is pushed. Check all light green wire connections. Ground green servo wire with eyelet terminal

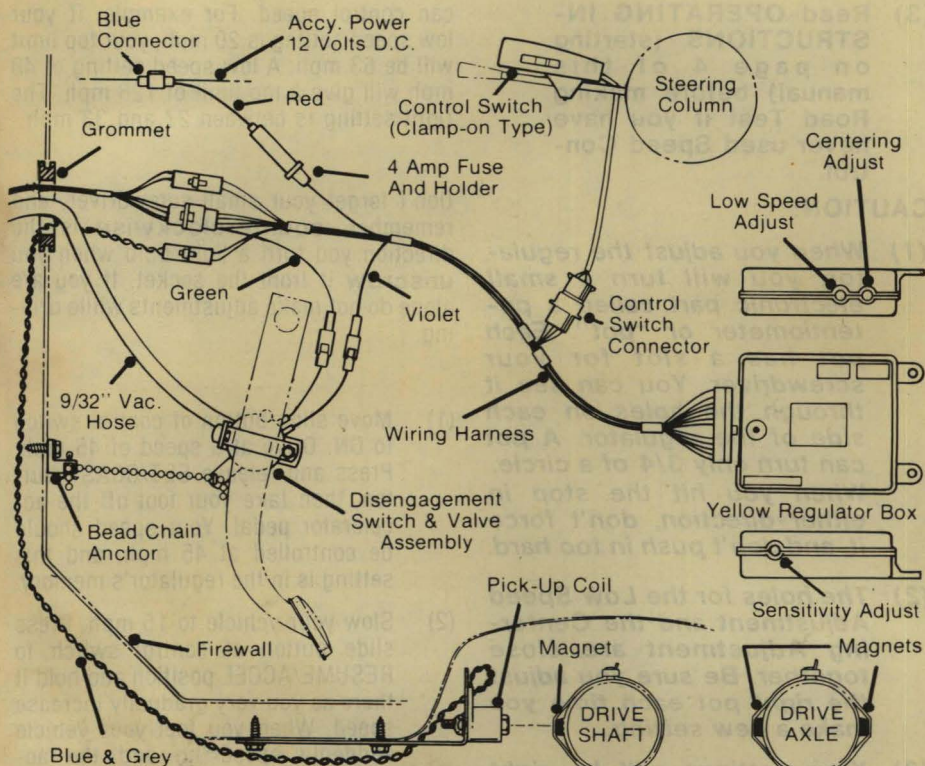
- (b) When electrical check is done, turn ignition off. To connect 14-terminal connector, hold regulator with RELEASE hole up. Hold connector so dark green wire is to your right.

Start one end in first with release latch under circuit board in regulator, then push firmly into place. Let regulator hang down for now, because it must be adjusted during road test.

The diagram illustrates the electrical system for the 1966 Ford Mustang 289ci V8 engine. Key components and their connections are as follows:

- Drive Shaft:** Connected to the Road Speed Pick-Up Coil via Blue and Grey wires.
- Road Speed Pick-Up Coil:** Outputs a Speed Signal (Blue wire) to the Regulator (Yellow Box).
- Servo:** Receives Ignition Power (Lt. Green wire) and provides Charge Valve (Orange), Vent Valve (Maroon), and Ignition Power (White) signals to the Regulator (Yellow Box).
- Disengagement Switch & Valve Assembly:** Includes a Throttle Position Feedback Rheostat and a Disengagement Switch. It provides Position Feedback (Lt. Green), Valve-Common (Violet), and Disengagement Sw (Lt. Green) signals to the Regulator (Yellow Box).
- Regulator (Yellow Box):** A 4-AMP IN-LINE FUSE is connected to the 12 Volt D.C. Ignition Power. The Regulator (Yellow Box) provides Ground (Black), Speed Signal (Blue), Charge Valve (Orange), Vent Valve (Maroon), Ignition Power (White), Not Used (Brown), Resume-Accel (Yellow), Position Feedback (Tan), Valve-Common (Orange), Disengagement Sw (Violet), and Speed Set (Dk. Green) signals.

The Regulator (Yellow Box) is connected to the 12 Volt D.C. Ignition Power via a 4-AMP IN-LINE FUSE. The Regulator (Yellow Box) provides Ground (Black), Speed Signal (Blue), Charge Valve (Orange), Vent Valve (Maroon), Ignition Power (White), Not Used (Brown), Resume-Accel (Yellow), Position Feedback (Tan), Valve-Common (Orange), Disengagement Sw (Violet), and Speed Set (Dk. Green) signals.



WIRING DIAGRAM

13. BEFORE ROAD TEST

Regulator Check

Set parking brake, put shift in neutral or park and start engine. Keep one hand on ignition switch and push slide button of control switch to ON. Then press and hold SET/COAST button for two seconds and release it.

If engine races, turn off ignition immediately. If system passed electrical check and engine did not race until SET/COAST button was pressed, regulator must be replaced.

Vacuum Check

Run engine at idle. Unplug smaller hose from servo and put your finger over end. If you feel strong suction, put hose back on. If not, find another place to get vacuum that gives you suction at idle.

14. ROAD TEST

DO NOT BY-PASS THIS STEP! Even if all parts are O.K. and have been put in right, you can have a system that doesn't work well just because the regulator is adjusted wrong. You will need a small blade-type screwdriver to make adjustments. Read the following **WARNINGS** and **CAUTIONS** first.

WARNING

- (1) For your safety, take someone along to read instructions and adjust while you drive.
- (2) Road test should not be done when roads are slippery nor in heavy traffic.

- (3) **Read OPERATING INSTRUCTIONS** (starting on page 4 of this manual) before making Road Test if you have never used Speed Control.

CAUTION:

- (1) *When you adjust the regulator, you will turn a small electronic part called a potentiometer or "pot". Each pot has a slot for your screwdriver. You can see it through the holes on each side of the regulator. A pot can turn only 3/4 of a circle. When you hit the stop in either direction, don't force it, and don't push in too hard.*
- (2) *The holes for the Low Speed Adjustment and the Centering Adjustment are close together. Be sure you adjust the right pot each time you make a new setting.*
- (3) *Your settings will be right and easier to make if you adjust the regulator while driving on fairly straight and level roads. You will have to slow down to 15 MPH to make the Low Speed Setting, so don't use interstate highways where 40 MPH is as slow as you are allowed to drive.*

Low Speed Switch Adjustment

The Speed Control will not control speed when you are driving slower than the "Low Speed" setting. If the system did not have a low speed limit, a driver might accidentally move the RESUME/ACCEL button while standing still or moving in slow traffic. This would make the engine go to wide open throttle if there happened to be a set speed still stored in the regulator's memory.

You can pick any low speed setting between 20 and 70 mph. Take 3.15 times the low speed you think you would like, and you will know the top limit at which you

can control speed. For example, if your low speed setting is 20 mph, your top limit will be 63 mph. A low speed setting of 40 mph will give a top limit of 126 mph. The right setting is between 27 and 33 mph.

Don't forget your small screwdriver; and remember - **counterclockwise** is the direction you turn a light bulb when you **unscrew** it from the socket. If you are alone do not make adjustments while driving.

- (1) Move slide button of control switch to ON. Drive at a speed of 45 mph. Press and release SET/COAST button, then take your foot off the accelerator pedal. Your speed should be controlled at 45 mph, and this setting is in the regulator's memory.
- (2) Slow your vehicle to 15 mph. Press slide button of control switch to RESUME/ACCEL position and hold it there as you very gradually increase speed. When you feel your vehicle suddenly speed up and the accelerator pedal give way under your foot, glance at the speedometer and release the slide button. The speed at which the system took control is the "low speed setting" of your regulator. If it is **not** between 27 and 33 mph, it should be corrected. Tap the brake pedal to disengage the system.

On one side of your regulator there are two holes. Insert small screwdriver in the one marked LOW SPEED SW. ADJUST., and if your setting was too fast, turn the potentiometer or "pot" counterclockwise just a little. If it was too slow (below 27 mph), turn the pot clockwise a little.

- (3) Drive at 15 mph once more and hold the slide button to the RESUME position as you slowly increase speed. The system should take over this time at a speed closer to 30 mph. Continue this procedure until you get the setting you want.

Centering Adjustment

- (1) Tap the brake to disengage the system, and drive at a steady 45 mph with your foot. Do this on a fairly level section of road. Press and release the SET/COAST button. Note the speedometer when you **released** the button. Take your foot off the accelerator. The Speed Control should keep your vehicle moving within 2 mph of your "set speed".
- (2) If your "control" speed is more than 2 mph above your "set" speed, turn the CENTERING ADJUST pot just a little counterclockwise. Turn it clockwise if the control speed was more than 2 mph below set speed. The CENTERING hole is next to the LOW SPEED hole.
- (3) Tap the brake and manually drive at 45 mph again. Press and release the SET/COAST button and see what your control speed is. Most people like it to be a mile or two above the set speed rather than below.

Sensitivity Adjustment

The SENSITIVITY ADJ. pot is adjusted at the factory to the midpoint of its travel. It should be road tested at this setting before readjusting it.

- (1) Drive at 50 mph and SET your speed. Let it control for a while and see how it feels. If you can feel it speed up and slow down too much, it might be because you have a lightly loaded vehicle which has a high-powered engine. It will work smoother and give you better mileage if you adjust the SENSITIVITY pot slightly counterclockwise. The hole is on the other side of the regulator from the CENTERING hole.
- (2) When you lower the sensitivity, you will also widen the control span (acceleration to coast). For interstate highway driving, it is suggested that this span be **no more than ± 2 mph**.
- (3) Changes in the sensitivity setting affect centering, so if you change the sensitivity, check the centering again and adjust as needed.

Operation Check

- (1) After all adjustments have been made so your Speed Control works the way you want it to, try each of the things it can do. Drive at 45 mph and SET speed. Ride for a few seconds, then tap the brake and slow down for about 5 seconds. Press and release the RESUME/ACCEL button. When you get back to a steady 45 mph, press and hold the SET/COAST button until you reach 35 mph, then release it. Ride at that speed for a few seconds. Press the RESUME/ACCEL button and hold it until you reach 55 mph, then release it. When your speed slows down to 45 mph, press and release the SET/COAST button. Watch it for a few seconds, then push the slide button to OFF.
- (2) Push the slide button to ON and then press it to RESUME and release it. Nothing should happen because when you turned the system OFF with the slide button, you erased the set speed it had in its memory, so it had no speed to resume to. You must first SET a speed in the regulator's memory and then the RESUME and ACCEL feature will work.
- (3) See TROUBLE SHOOTING GUIDE if there is any problem. The Road Test is finished.

15. REGULATOR INSTALLATION

The regulator and a lot of wiring must be hidden up under the dash. This is becoming a problem in some of the smaller vehicles.

If your vehicle's windshield wiper mechanism is under the dash, turn your wipers on to see where the crank arm sweeps before stowing regulator and harness.

After finding a safe, clear space, fasten the regulator there with screws, tape, or the wire ties supplied. Also hold the wiring up out of sight with the wire ties.

Installation is now complete.

Trouble Shooting Guide

CONDITION	POSSIBLE CAUSE	REMEDY
Does not engage "On-OFF" Switch "ON" NOTE: System will not engage if vehicle is not moving faster than the LOW SPEED SETTING	No voltage on brown wire at regulator	Repair wiring harness or check for loose connections. Check disengagement switch adjustment. "Disengagement Switch". See Page 27
	Ported vacuum, restricted vacuum, or no vacuum	Be sure vacuum connection is made to engine at a point that has continuous vacuum (below carburetor throttle plate). Page 22
	Disengagement sw. not adjusted	Adjust disengagement sw. - Page 27
	Loose terminals on 14 pin connector	Bend terminals slightly
	Faulty electrical or vacuum connection	Tighten connections and make Electrical Checks - Page 33
	Control switch inoperative	Make Control Sw. Check - Page 39
	Road speed pick-up coil gap excessive or magnet(s) missing	Set gap $\frac{3}{4}$ " to $1\frac{1}{4}$ " or replace missing magnet(s) See Page 8
	Faulty regulator	Replace regulator
Engine accelerates when started	Servo not connected to throttle	Check bead chain or cable connections at servo and at throttle
	No slack in bead chain	Recheck slack with throttle in hot idle position. Page 21
	Vacuum connections reversed on servo	Check servo vacuum connections
Vehicle continues to accelerate after depressing & releasing "SET/COAST" button	Faulty servo	Replace servo
	Faulty regulator	Replace regulator
	Bad ground connection	Check green servo wire Page 13
"RESUME/ACCEL" feature inoperative	Control switch faulty	Perform control sw. check Page 39
Does not disengage when brake is applied	Improper disengagement switch adjustment	Adjust disengagement switch. See "Disengagement Switch". Page 27
Re-engages when brake is released	Faulty disengagement switch (electrical)	Replace disengagement switch
	Faulty Regulator	Replace regulator
"RESUME/ACCEL" feature does not cancel when ignition switch is turned off	Wrong power source, power supply is always on	Select correct power source—red wire of Speed Control wiring harness to 12 volts with ignition key to "On" or "Acc" position, no voltage when ignition key is in "Off" position. Page 31
Throttle does not return to normal idle	Improper servo cable adjustment	Check servo cable adjustment - Page 21
	Improper accelerator linkage adjustment	Adjust accelerator linkage
	Weak or disconnected throttle return spring	Replace or connect spring
Accelerates and coasts alternately or has pulsating accelerator pedal	Variable voltage	Select constant voltage power source. Page 31
	Sensitivity set too high	Rotate "Sensitivity Adj." counterclockwise & reset centering. See "Road Test". Page 37

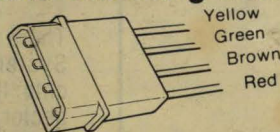
Trouble Shooting Guide—(con't.)

CONDITION	POSSIBLE CAUSE	REMEDY
Vehicle speed increases or decreases more than 2 miles per hour when making a setting with "Set/Coast" button	Centering adjustment improperly set	Reset "Centering Adj." See "Road Test" Page 37
In-line fuse blown	Short or ground in Speed Control wiring harness	Perform electrical checks—Replace fuse with 5 amp max. fuse Page 33
Erratic operation of Speed Control	Road speed pick-up gap too large	Set gap $\frac{3}{4}$ " to $1\frac{1}{4}$ ". Page 8
	Magnet(s) not aligned with coil	Re-locate magnets or bend bracket
	Coil bracket flexing	Move mounting screws or reinforce bracket
	Ported vacuum (above carburetor throttle plate)	Engine vacuum source to be at a point that has continuous vacuum. Page 22
	Faulty servo	Replace servo
	Faulty regulator	Replace regulator
System disengages on level road without applying brake	Loose wiring connections	Repair & make Elec. Check P. 33
	Leaky vacuum connections	Check vacuum connections
	Servo connections broken or throttle clamp slipped	Repair linkage or tighten clamps
	Disengagement switch adjustment	Adjust disengagement switch. See "Disengagement Switch" Page 27
System engages but loses speed & then slowly returns to selected set speed	Vacuum leak at disengagement switch	Adjust disengagement switch. See "Disengagement Switch" Page 27
	Pick-up coil bracket bent causing improper gap	Set gap $\frac{3}{4}$ " to $1\frac{1}{4}$ ". Page 8
	Missing magnet - Axle - 2 Req'd. Drive Shaft - 1 Req'd.	Replace missing magnet

Control Switch Check • Trouble Shooting Guide

Use a 12 volt Test Light and Jumper Wire To Perform These Checks

Disconnect switch at flat, 4-wire harness connector. Attach jumper wire from 12 volt power to red wire terminal of Control Switch Connector.



Test Condition	Wire Color	Switch O.K.	Replace Switch
Slide switch to OFF, ground one test light lead, touch other test lead in turn, to terminal of:	Brown wire Green wire Yellow wire	Light OFF Light OFF Light OFF	Light ON Light ON Light ON
Slide switch to ON, ground one test light lead, touch other test lead in turn, to terminal of:	Brown wire Green wire Yellow wire	Light ON Light ON Light OFF	Light OFF Light OFF Light ON
Slide switch ON, press and hold "SET/COAST" button. Ground one test light lead, touch other test lead, in turn, to terminal of:	Brown wire Green wire Yellow wire	Light ON Light OFF Light ON	Light OFF Light ON Light OFF
Slide switch ON, press and hold "RESUME/ACCEL" button. Ground one test light lead, touch other test lead, in turn, to terminal of:	Brown wire Green wire Yellow wire	Light ON Light ON Light ON	Light OFF Light OFF Light OFF

NOTE

Place this manual in the glove compartment for future reference. If you are **not** the vehicle owner, place the "Operating Instructions" card on the turn signal lever.

ELECTRONIC SPEED CONTROL TESTER

Part No. 250-3034



There is available an Electrical System Tester which plugs onto the 14-pin harness connector and quickly checks the electrical system of the Speed Control. With it you can also check the disengagement switch adjustment, the throttle connection and the vacuum source. Contact your distributor for more information.

For Technical Information
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